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ABSTRACT

This report on the education of minorities results from policy research projects conducted at the Lyndon B. Johnson School of Public Affairs at Texas University (Austin) as part of the Quality Education for Minorities project to provide background research for development of a national action plan on improving the quality of education for Alaska native, American Indian, Black American, Mexican American, and Puerto Rican students. The following papers are presented as chapters: (1) "Education for Minorities and the National Interest" (R. Marshall); (2) "Parent-Child Interventions for Children Age Zero to Three: The Role of the States" (S. J. Means); (3) "Neither Equitable nor Excellent: The Effects of Tracking on Minority Students" (F. Mecca); (4) "Everyone Can Learn Math" (R. M. Nielsen); (5) "Mathematics and Science Education: Reclaiming Minorities at the Elementary School Level" (D. T. Garza); (6) "Assessment and Referral of Hispanic Bilingual Special Education Students: A Growing Controversy" (C. C. Talkington); (7) "Magnet Schools: A Quality Alternative" (E. Fonken); (8) "Magnet Schools for Disadvantaged Students in Texas" (J. Cano); (9) "Performance-Based Funding for Schools: A Practical and Feasible Alternative" (D. M. Marchick); (10) "Choice in Minnesota: Open Enrollment as a Means of Educational Reform" (J. S. Wicinski); (11) "Coordinating Social Services: The Role of Schools" (J. M. Ehrlich); (12) "The Potential Impact of Restructuring on the Education of Minorities: The Miami Experience" (B. Rungeling); (13) "The Use of High-School Vocational Counseling To Help Students Choose and Implement Career Choices" (S. L. Holland); (14) "Improving the School-to-Work Transition of Minority Youths" (R. W. Glover); and (15) "Effective Strategies for the Recruitment and Development of Black Faculty at Four-Year Institutions of Higher Education" (R. Pickering). One figure and 21 tables illustrate the essays. Contains 454 references. (SLD)

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The Importance of Quality Education for Minorities

Lyndon B. Johnson School of Public Affairs
The University of Texas at Austin
Policy Research Project Report

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96

Lyndon B. Johnson School of Public Affairs
Policy Research Project Report
Number 96

SECURING OUR FUTURE:
THE IMPORTANCE OF QUALITY EDUCATION FOR MINORITIES

A report by the
policy research projects entitled
Minority Education: A Blueprint for Action (1989-90) and
Interventions to Improve Minority Education in Texas (1990-91)
1992

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Foreword

The Lyndon B. Johnson School of Public Affairs has established interdisciplinary research on policy problems as the core of its educational program. A major part of this program is the nine-month policy research project, in the course of which two or three faculty members from different disciplines direct the research of ten to twenty graduate students of diverse backgrounds on a policy issue of concern to a government agency. This "client orientation" brings the students face to face with administrators, legislators, and other officials active in the policy process, and demonstrates that research in a policy environment demands special talents. It also illuminates the occasional difficulties of relating research findings to the world of political realities.

This report on the education of minorities results from policy research projects conducted in 1988-89 and 1989-90 as part of the Quality Education for Minorities (QEM) Project under funding from the Carnegie Corporation of New York. The Quality Education for Minorities Project was begun at the Massachusetts Institute of Technology with a subcontract to the Lyndon B. Johnson School of Public Affairs. These papers were prepared as part of the background research for the development of a national action plan on improving the quality of education for Alaska native, American Indian, Black American, Mexican American and Puerto Rican students. Publication of this work was paid for under a separate grant from the Carnegie Corporation of New York. Implementation of the national action plan continues under the leadership of the Quality Education for Minorities Network in Washington, D.C. This report contains a collection of some of the best papers prepared by students and staff who worked on the project over the two-year period. The research makes clear that how well we deal with the education of minorities will affect the economic and political future of our country. Two very positive themes are clear in this work: (1) we already know a good deal about what works to improve the education of minorities and (2) the changes in education needed to better serve minorities will improve the education provided to everyone. The message and action plan developed by the Quality Education for Minorities Project needs to be heard especially in Texas where a majority of students enrolled in public schools now come from minority groups.

The curriculum of the LBJ School is intended not only to develop effective public servants but also to produce research that will enlighten and inform those already engaged in the policy process. The project that resulted in this report has helped to accomplish the first task; it is our hope and expectation that the report itself will contribute to the second.

Finally, it should be noted that neither the LBJ School nor The University of Texas at Austin necessarily endorses the views or findings of this study.

Max Sherman
Dean

Preface

The chapters in this volume were prepared as background material for the Quality Education for Minorities (QEM) Project, whose report *Education That Works: An Action Plan for Minority Education* was released in January 1990 (Quality Education for Minorities Project). The main purpose of the QEM project was to develop an action plan for improving minority education, not to research the problem: we assumed that this purpose could best be achieved by supplementing existing research with assessments of interventions to improve minority education that were underway all over the country. We therefore talked with a large number of community leaders and education experts and held nine regional hearings at which over 350 statements were taken from students, parents, school administrators, public officials, and others concerned about education for minorities. These hearings were held in New York City; San Antonio, Texas; Los Angeles, California; Chicago, Illinois; Anchorage, Alaska; Albuquerque, New Mexico; Atlanta, Georgia; San Juan, Puerto Rico; and Cambridge, Massachusetts.

The QEM project was based on several assumptions. The first was that the United States could remain a high-income, stable democratic country only by providing quality education for everybody. In other words, we assumed that it would no longer be possible to have quality education only for a small elite at the top of the social order.

We assumed, further, that the best way to provide all Americans with a quality education is to improve the conditions of those who are most poorly served by the present system. That is the reason we focused on the education needs of Alaska natives, American Indians, Blacks, Mexican Americans, and Puerto Ricans.

We also thought it important to take a comprehensive view of the lifetime learning cycle. We therefore examined preschool (even prenatal) interventions, formal education from kindergarten through graduate school, as well as workplace and second-chance learning systems. This comprehensive approach makes it possible to understand how problems at one stage in the learning cycle are transferred to other stages.

Finally, we recognized that quality education for all was a necessary but not sufficient condition for economic prosperity and social stability. We also need social and economic policies to promote full employment, high incomes, and social and economic justice. While we recognized the importance of these other policies, our focus was on the measures needed to provide quality education for minorities.

The papers in this volume were selected from the background materials prepared for the project, described more fully in Chapter 1. The papers were prepared by the students and staff of the LBJ School of Public Affairs. Chapter 1 of this volume is a background paper by Ray Marshall which develops the economic, technological, and demographic context for the QEM

Project and outlines the main recommendations of the Action Council on Minority Education, which had general oversight for the QEM Project. The main thrust of Chapter 1 is to demonstrate that providing quality education for all of our children has become an economic necessity as well as a moral imperative. The main determinant of economic success in an internationalized information economy is the quality of our workforce, and minorities will constitute most of the net growth of America's workforce for the next 50 years. All Americans will therefore lose if we do not provide quality education for all of our children, especially minorities, who are most disadvantaged by our present learning systems. The good news is that we know what to do—as the QEM Action Plan attests. The challenge therefore is to muster the national will to provide the resources, policies, and structures to provide quality education for everybody.

Chapter 1 makes it clear, however, that while necessary, improvements in school systems are not sufficient to allow the United States to retain its position as a prosperous democratic country with equal opportunity for all. We also must have proper economic and social policies and must improve other learning systems, especially in families, on-the-job training and education, and measures to prepare school leavers for work (Commission on the Skills of the American Workforce, 1990).

In Chapter 2 Sally Means assesses the role of parents in the early education of children, with special emphasis on some state programs that have proved very successful in enhancing the education achievement of children by helping parents to become better child developers and teachers. This is a very important subject because the family is the most basic learning system. It will do much less good to reform other learning systems unless children start school ready to learn and unless parents take active roles in their children's education. A major education problem in the United States is caused by the fact that the United States has a larger percentage of its children in poverty than is the case with any other industrialized democracy. Fortunately, research demonstrates that interventions like the Supplemental Food Program for Women, Infants and Children (WIC), quality early childhood education, and others discussed in Sally Mean's paper can make it possible for poor and minority children to receive quality education.

One of the most important obstacles to minority education is the expectation by many parents, teachers, school administrators, and minority children that they cannot excel academically. This expectation is related to the myth that educational achievement is due mainly to innate ability. These attitudes lead to educational practices that place minority students in groups that are not expected to learn the same subjects or attain sufficient knowledge and skills as those expected to go to college. In Chapter 3, Frank Mecca shows tracking to be very detrimental to minority students. Tracking is dangerous and wrong because there is abundant research to show that learning is mainly due to hard work and supportive learning systems, not innate ability, and that tracking impairs students' learning. High performance schools would therefore avoid tracking and take responsibility for the educational achievement of *all* students, not just those who are judged to be suitable for college.

Mathematics is a major problem in the education of American children in general and minority children in particular. There are a number of reasons for this, but tracking is certainly one of them. It is generally assumed that the non-college bound will not need math and that some children are unable to learn it. Both of these assumptions are as dangerous as they are erroneous. As Bob Nielsen demonstrates in Chapter 4, anyone can learn math, but the traditional drill and practice methods are boring and make math unnecessarily difficult. He examines some innovative approaches for the teaching of math at very early ages based mainly on moving from the concrete to the abstract and approaching math as thinking processes instead of memorization. An important point about math is that it is ways of thinking as much as tools of analysis.

Permitting students to avoid math greatly restricts their options. A good rule of thumb is that if students do not learn algebra by the time they are in the 8th or 9th grade, their options for scientific or engineering careers are greatly restricted. The need for all students to learn mathematics has increased because one of the main outcomes of information technology is to make much more data available to everyone. Those who can impose order on that data can use it to solve problems and improve the qualities of whatever they do, whether it be frontline manufacturing employees, workers in banks and insurance companies, teachers, or consumers. Those who cannot manipulate data, i.e., *use* mathematics, are therefore at a serious disadvantage.

Unfortunately, minorities are greatly underrepresented in mathematics courses as well as in mathematics majors and teachers, as David Garza shows in Chapter 5. Garza also examines some approaches that would make it possible to reclaim minority students at the elementary level. Like Bob Nielsen, he is critical of the "rote, arithmetical drill and practice" approach to the teaching of mathematics. Garza demonstrates, in addition, that minority students suffer from resource poor environments and the absence of qualified mathematics teachers. Teachers also are problems because too many of them have lower achievement expectations for minority students than they do for Whites. Garza examines a number of interventions that can improve the mathematics achievement of all students, especially minorities. Successful interventions all stress making teachers more competent in mathematics and science, intervening in elementary schools, stressing "activity-based" or learning by doing approaches, relating math and science to students' lives, and involving parents in their children's education.

Many minority students have limited English language skills. This is an especially serious problem for Hispanics. If teaching methods and materials are in English, non-English speaking students are likely to have learning problems that have nothing to do with their ability to learn, even though they risk being labeled "slow learners." In Chapter 6, Clark Talkington examines the bilingual education controversy as it affects Hispanic students. He examines the evolution of federal interventions in this area, especially the improper assessment of Hispanic students, who suffer from inappropriate placement in "learning disabled" programs. He shows that improved learning for Hispanic students must start with the proper preparation of teachers, school staffs, and parents. A strong program would emphasize students' ability to learn basic subjects in their first language while they learn English. Since student achievement is strongly influenced by parental involvement, a successful bilingual education program would make it possible for non-English speaking parents to help their children.

As Ray Marshall emphasizes in Chapter 1, school restructuring is very important for all students, but especially minorities. This is so because restructured schools would stress student achievement as their primary objective. Moreover, a restructured school would take responsibility for the achievement of basic standards by *all* students, not just those who are in the college track. Chapters 7 through 12 deal with various aspects of school restructuring. In Chapters 7 and 8, Eric Fonken and Jose Cano examine the importance of magnet schools and magnet programs. They point out that this approach, which organizes schools around particular subjects or educational approaches, has dangers as well as advantages. The danger is that the highly motivated students with the highest academic achievement will be concentrated in magnet schools, weakening the non-magnet schools. It is, however, possible to guard against this danger by restructuring schools to make them *all* excellent schools where all students are required to meet basic standards.

Restructuring requires agreement on basic educational outcomes for students. A major problem for the United States is the absence of national standards for high school graduation. The Commission on the Skills of the American Workforce recommends development of such standards, and has initiated a long-range process to achieve that objective. Outcome standards would give employers and post-secondary institutions a better measure of school leavers' skills and knowledge. Standards would also improve students' motivation to improve their achievement; under present arrangements, the achievement of academic excellence is relatively unimportant for most non-college bound students.

Positive incentives that encourage schools to improve student performance must be part of any restructuring activity. Many systems to allocate funds to schools have either been neutral with respect to student performance or actually perverse, as when the allocation of funds on the basis of average daily attendance for a few weeks early in the school year provide no incentives to prevent dropouts. In Chapter 9, David Marchick illustrates how a performance-based allocation system might work.

One popular approach to school reform is to suggest that parents or students have free choice among schools. It is assumed that such an approach would create competition among schools and therefore stimulate improvements. The evidence suggests, however, that choice alone is unlikely to produce positive results. Indeed, most so-called choice programs have either followed or been part of school restructuring programs. In Chapter 10, Jill Wicinski analyzes early experiences with Minnesota's choice program.

As noted earlier, families are the most basic learning system. However, because of changing family structure and social practices, schools are being called upon to provide services formerly provided by families or community institutions. In Chapter 11, Jill Ehrlich examines some issues involved in using schools to coordinate the delivery of services to students and families.

Most school restructuring proposals contemplate shifting more management decisions to schools. One of the most extensive of these efforts has been in Dade County, Florida, analyzed by Brain Rungeling in Chapter 12.

Chapters 13 and 14 analyze other matters of great importance to minority education. Improved vocational counseling is needed to strengthen students' career choices, a subject discussed by Shari Holland in Chapter 13. One of the weakest links in the American education system is the absence of a systematic means to prepare non-college bound students for jobs. Bob Glover discusses this subject in Chapter 14.

A major obstacle to strengthening minority education is the shortage of minority teachers who can serve as role models and help interpret minority needs and values to school administrators and teachers. In Chapter 15, Richard Pickering discusses some effective strategies used by universities and foundations in a number of states to increase minority faculties in nontraditional academic disciplines.

Acknowledgements

This volume contains a selection of the best of more than three dozen papers written by graduate students and staff over a two-year period to provide research support for the Quality Education for Minorities (QEM) Project, headquartered at the Massachusetts Institute of Technology (MIT). The choice was difficult because of the large number of good papers. Each participant chose a topic that matched his or her own interests. Authors were encouraged to exercise their independent judgment. Thus, not all views expressed in these papers represent the positions of the Quality Education for Minorities Project, or its successor organization, the Quality Education for Minorities Network, located in Washington, D.C. The reader is urged to examine *Education that Works: An Action Plan for The Education of Minorities,* which summarizes the consensus positions of the Quality Education for Minorities, its Resource Group, and the Action Council on Minority Education.

We owe many people thanks for help in this effort. Shirley McBay and Shirley Malcom were the inspiring and driving forces behind the QEM project. Both very effectively combine roles as scientists and advocates for quality education for minorities. Bernard Charles, who served as project officer for the QEM project, is an unequalled national treasure with wisdom and first-hand experience in almost every facet of the challenge of implementing quality education for minorities—from resolving problems with youth gangs to achieving effective equal opportunity in university programs. We thank members of the QEM staff at MIT, especially Richard Hope, Paul Goodwin, and Keva Wright. Their dedication and cheerful, collaborative spirit considerably reduced the distance from Massachusetts to Texas during the project.

We thank David Hamburg, president of the Carnegie Corporation of New York, whose help with funding put this volume into print. He reminded us that the future of American minorities is closely connected to the future of all Americans and that in finding ways to serve the educational needs of those hardest to reach, we often discover useful techniques for teaching all children more effectively.

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Finally, we want to thank the hundreds of people who responded to our numerous requests for information in interviews, telephone calls, and letters.

Chapter 1. Education for Minorities and the National Interest

by

Ray Marshall[*]

This chapter reviews some of the basic economic, technological, and demographic trends that make quality education for minorities such an important national problem, presents some of the evidence with respect to the condition of the education of minorities in the United States, and concludes with a summary of the main recommendations from the *Education That Works: An Action Plan for the Education of Minorities* (Quality Education for Minorities Project, 1990), with special emphasis on the need to fundamentally restructure our public schools.[1]

ADJUSTING TO A MORE COMPETITIVE WORLD

Both our schools and our businesses are being forced to adjust to a much more competitive and technologically sophisticated world which requires different policies, structures, and institutions and in which women and minorities play a much more important role.

A major determinant of a country's economic performance is its speed in adapting to new economic conditions. Because it has not adjusted as fast as some of its competitors, the American economy is losing its relative position, as measured by market shares, productivity growth, and real incomes. The U.S. share of world manufacturing trade dropped from 14.9 percent in 1970 to 10.5 percent in 1985. The European Community's share decreased less, from 46.2 percent to 43.1 percent. Big gains were made by Japan and the East Asian newly industrializing countries, whose shares about doubled—from 11.7 percent to 22.1 percent. America's losses have not been restricted to any one sector—since 1981, we have experienced trade deficits even in high-tech industries like communications equipment, scientific instruments, and engines. Productivity growth in America has slowed from an annual average increase of 2.9 percent in the period 1960 through 1973 to just over 1 percent since 1973. As a consequence, real average weekly earnings in the U.S. have dropped more than 12 percent since 1969 (Commission on Skills of the American Workforce, 1990, p. 19).

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The crises in our economy and in our schools are exacerbated by some demographic developments that should create a sense of urgency about improving the performance of both systems. One of these is the changing racial and ethnic composition of our workforce. White males, the main source of most elite workers in the mass production system, will constitute less than 10 percent of the net growth of our workforce between now and 2000. Minorities will constitute about 53 percent of the growth and white women just over one-third (34.5 percent). Indeed, by 2080 non-Hispanic Whites probably will be a minority of the U.S. population. In other words, except for women, the greatest growth in our population and workforce will be by people who currently are served very poorly by our schools.

A second demographic factor is the aging of the American workforce. The large baby boom generation of over 70 million will start reaching retirement age by the year 2010. There is therefore a need for substantial improvements in the economy over the next 20 years. Otherwise the health and pension requirements of an aging population will greatly restrict the resources available for investment and other uses, and inadequate investment in physical and human capital will be a major deterrent to our economic strength.

The good news is that the American economy, despite its problems, remains very strong. With the proper policies, the well educated baby boomers and highly motivated minorities and women could be the source of substantial improvements in productivity and economic performance—provided, of course, that we adopt the proper social and economic policies and give all of our people, especially minorities, the kind of intellectual tools they will need to function effectively in the internationalized information world.

WILL THE FUTURE REQUIRE MORE EDUCATION?

In order to understand better why these intellectual tools are necessary, we need to examine the impact of technological innovations and international competition, two forces that have profoundly changed economic activity, skill requirements, and America's standing in the global economy.

Technology

Technological innovations have had a monumental impact on the workplace and the economy. Information technology, for example, has diminished the need for many managers, inspectors, and unskilled workers and has made smaller producing units more efficient. This technology has, in addition, caused much of the *direct* labor to be done by machines, while humans increasingly are involved in *indirect* work, mainly with knowledge and information. To be used most effectively, these technological changes require workers to have more *higher order thinking skills* than when most workers were involved in direct, routine manual labor. A major consequence of the new technology, for instance, is to make more data available to everybody. A premium therefore attaches to the *ability to impose order on chaotic data* (i.e., to see patterns and causal relationships that permit the data to be used to solve problems, improve technology, and increase the value of products). What is happening, in essence, is that productivity is being improved by substituting knowledge for physical resources and labor. Nobel laureate Theodore Schultz discovered this process at work in American agriculture (1981). There have been great increases in U.S. agricultural output despite the fact that there have been no increases in labor and physical resources since the 1920s. Output is being increased by *knowledge*, not by increased quantities of land, labor, and capital. Schultz therefore saw that economic progress depended heavily on the development of human resources, not primarily, as many economists had emphasized, on the accumulation of physical capital, or on natural resources, a traditional American advantage.

Competitiveness

Internationalization of the American economy interacts with technology to change traditional work practices and skill requirements. Standardized mass production, the system largely responsible for America's economic success, depended heavily on U.S. companies' virtual control of the large American market, an advantage no longer available to them. The new main requirement for economic viability and power is *competitiveness*. A more competitive environment forces companies to pay greater attention to several factors that were less important to mass-production companies. One of these is *quality,* which means meeting customers' needs. Mass production companies could pay less attention to quality because that system was more producer driven; competitive systems, by contrast, are more consumer driven. Competitive companies also derive their main advantage from improving productivity by using *all* factors more efficiently, not just through economies of scale. Mass-production companies stressed *stability* through price controls, orderly technological change, and detailed regulation; more market-driven companies must stress *flexibility* in order to adjust to changing markets and technologies.

Competitiveness can be achieved in two ways: reducing wages or paying more attention to productivity, quality, and flexibility. A country that wants to maintain and improve income therefore will stress measures to increase productivity. Productivity improvements within a company depend on the effectiveness of management systems and a firm's ability to develop and use leading-edge technology. Experience during the 1970s and 1980s has shown America's traditional authoritarian and bureaucratic mass-production management systems to be extremely vulnerable to more efficient systems used in countries like Japan and Sweden and in a few American companies. These systems stress many fewer layers of management, a high degree of employee involvement in production decisions, heavy investments in on-the-job learning systems, employment security, and bonus compensation systems. More participatory management systems are as important in schools as they are in companies—and for the same reasons: schools, like companies, must now be more concerned about productivity, flexibility, and quality or excellence. Schools also must produce higher order thinking skills for all students, not, as in the mass-production system, just for the elites.

Competitive enterprises will thus develop and use technology in very different ways from their less competitive predecessors. The mass-production system attempted to combine *standardized* technology and unskilled labor. Since standardized technology can be used anywhere, in a competitive global economy it is unlikely to be economical in high-wage countries. Leading-edge technologies that have not been standardized enable their owners and users to have higher incomes. We should note, however, that standardized technology can be very sophisticated, or "high tech." The possible technology-skill combinations are therefore (1) standardized or "low technology," and unskilled workers, which implies low wages and weak competitiveness; (2) high technology and unskilled workers, which implies somewhat higher wages but a limited ability to innovate or apply higher order thinking skills; or (3) high technology and highly skilled workers, which is more competitive because highly skilled workers can develop and use the technology more effectively. If we want to be a high-wage country, we must therefore develop a highly skilled workforce, and we will give high priority to the development and use of leading-edge technology. We should note, however, that the United States no longer has the broad technological lead that we had in the 1970s.

Workforce Quality

There are, unfortunately, no good measures of workforce quality. It has been customary to measure quality by years of schooling, an area where the United States ranks very high. Contrary to popular myth and political rhetoric, however, the United States ranks near the bottom among industrial countries on expenditures on K-12 education (Rasell and Mishel, 1990). We also should note that average years of schooling do not translate into higher skills. For one thing, the U.S. has a relatively short school year, and our high school students spend about a fourth less time on homework than the Japanese and take a third less math. According to one estimate, the typical American senior high school student spends an average of one-half hour per day on homework, while Japanese students average two hours; the Japanese student is required to take three years of mathematics to one for the Americans; and Japanese students average six years of foreign language to the Americans' zero to two years (*Japan Update*, Summer 1988, p. 6). It is not surprising, therefore, that American students rank near the bottom on most international math and science tests while Japanese students rank near the top.

Furthermore, schooling, while pivotal, is an imperfect measure of workforce quality because there are other learning systems, especially families, work, the media, community organizations, and political processes.

There seems to be an emerging consensus that America's higher level professional, technical, and scientific workers are world class, but that, with few exceptions, those without postsecondary training are not. The factors accounting for the high quality of our best workers include (1) our colleges and universities are generally world class and are net exporters of education services to the rest of the world; (2) many of our companies have world class learning systems and, while accurate data are not available, according to one estimate they spend over $200 billion a year on education and training (Carnevale, 1983); (3) many legal immigrants to the United States have higher levels of education than native-born Americans and therefore enrich our human capital pool (Marshall, 1991, pp. 95-138) ; and (4) although we do not do a very good job of translating science into products, the U.S. clearly has the world's leading scientific research system.

The reasons we have serious problems with our least skilled workers include:

(1) America's elementary and secondary schools are not world class and probably serve less than 20 percent of our students very well. According to the National Assessment of Educational Progress (NAEP), only 20 percent of high school graduates can write a decent letter, only 12 percent can arrange fractions in rank order, and less than 5 percent can read a train or bus schedule (NAEP, 1986).

(2) America has a much higher proportion of its children in poverty than any other major industrial country. For example, a 1988 Urban Institute study found that 17.1 percent of American children were below the poverty line compared with 8.2 percent in Germany, 5.1 percent in Sweden, 10.7 percent in the United Kingdom, 9.6 percent in Canada, and 16.9 percent in Australia (Urban Institute, 1988). Almost a fourth of America's children are now born into poor households and children constitute about 40 percent of the poor. Poverty is a particularly serious problem for minority households, especially those headed by women.

With a few remarkable exceptions, poor households do not provide children the kinds of knowledge and skills they will need to succeed in school. This is one reason that family income is such a strong predictor of education achievement. This also is why the Committee for Economic Development, a leading business policy organization, found that early childhood programs and health care for mothers and babies yield such high returns (Committee for Economic Development, 1987).

(3) As the 1988 Grant Commission demonstrated, the United States probably has the poorest school-to-work transition system of any major country and does almost nothing for that half of our 16-to-24-year-olds who are not college bound (William T. Grant Foundation Commission on Work, Family and Citizenship, 1988a and 1988b).

(4) America has had relatively rapid job growth during the 1970s and 1980s, but many of these jobs have paid low wages and have provided very limited learning opportunities. Unlike our principal competitors, we have had no national policy with respect to job quality. We therefore have perpetuated jobs that would be unacceptable to other high-wage countries.

(5) While we do not have accurate data on illegal immigrants, the information available suggests that these workers have education levels of four to six years on the average.

One of the most important facts about America is that Whites will become a minority of the U.S. population sometime in the 21st century because the minority population of our country is growing much faster than that of Whites. Indeed, in some areas, the term minority has lost its statistical meaning, for minorities are already in the majority. Alaska natives, American Indians, Blacks, and Hispanics presently constitute about 20 percent of our population; by 2020 or so, one-third of the nation will be minority, including Asian Americans. By about 2080, minority Americans are projected to be in the majority.

In our schools, the future has already arrived. Between 1968 and 1986, the number of White students fell by 16 percent, the number of Blacks increased by 5 percent, and the number of Hispanics rose by 100 percent. More than 30 percent of students in public schools—some 12 million—are minority. Mississippi and New Mexico have "majority minority" public schools, and California and Texas, with the largest public school enrollments in the nation, are about to join that list. Today, minorities constitute a majority of the enrollments in 23 of the nation's 25 largest school districts. The demographics make it clear that the country cannot develop a world-class educational system without addressing the needs and perspectives of minority Americans.

Trends

Many minority and low-income children begin school behind, without the learning and social skills required to succeed in our schools. In the earliest grades, children are separated by perceptions of their abilities. Teacher expectations are often low for minority children with different cultural and language backgrounds and less or different preparation at home. "Ability" testing of children can begin as early as the prekindergarten level. Children of diverse cultures taking these tests are frequently placed in low-ability or remedial tracks, from which it is nearly impossible to recover.

By third or fourth grade, minority and nonminority achievement levels begin to diverge. At this level, minority children are more frequently placed in "low ability" classes and are also more likely to be placed in classes for the educable mentally retarded and other special education classes. This divergence is particularly pronounced for minority males. Young Black males, for example, "disproportionately experience nonpromotions, suspensions, expulsions, and dropping out (Garibaldi, January 1990, p. 4).

By the middle school years, test scores show on average that minority children are a year or more behind. By the end of high school, the gap in achievement between minority and nonminority youth is three or four years on tests such as the National Assessment of Educational Progress (NAEP), which measures the ability of students to use knowledge. By age 17, the average minority student achieves at the level equivalent to that of White 13-year-olds, according to the NAEP.

Indicators of Educational Achievement

Minority students are pushed out or begin dropping out of school as early as 8th or 9th grade. The reasons include being behind in classwork, low teacher or personal expectations, the need to work, becoming teenage parents, substance abuse, gangs, and sometimes boredom. Dropout rates vary depending on how they are measured, but the patterns are consistent. Dropouts among Black youth have slowed greatly over the last decade: in 1989, according to the U.S. Census Bureau, about 15 percent of Black youth aged 16 to 24 had not graduated and were out of school; this was down from 27 percent measured in 1968. But the 1988 Hispanic rate was nearly 36 percent, about three times the 13 percent rate for White youth. The 1986 "High School and Beyond" study by the U.S. Department of Education tracked students who were sophomores in 1980. By 1982, the dropout rate for American Indians and Alaska natives was about 36 percent (see Table 1). In many inner city school districts, minority dropout rates were even higher. A study in Los Angeles, for example, put American Indian dropout rates at 57 percent, Black rates at 46 percent, and Latinos at 40 percent.

Minority children also have lower scores on the Scholastic Aptitude Test (SAT) or the American College Testing (ACT) tests that many high-school students take as part of their applications for college. The size of the continuing gap detracts from the fact that most minority groups have improved their performance since the mid-1970s. In 1989, as Table 2 indicates, SAT math and verbal scores for White students were still 27 percent higher than scores of Black students, 22 percent higher than scores of Puerto Rican students, and 15 percent higher than scores of American Indian and Mexican American students. As the relative income earning value of a high school diploma drops, it becomes more and more important for young people to have the postsecondary education which now forms the foundation for better jobs in a modern economy. Thus, SAT scores aside, the success of the country's higher education system in meeting the needs of minority students can best be measured by how many get into college (enrollments), how many stay in (retention), how many receive their degrees (graduation rates), and how many complete graduate and professional schools.

Unfortunately, college enrollments and degree attainments reveal the same mixed results. As can be seen in Table 3, the 1.8 million Alaska native/American Indian, Black, and Hispanic college students enrolled in college in 1986 represent large increases, but much of that growth simply represents overall increases in population. For example, the number of Hispanics aged 18-24 in college grew 43 percent between 1976 and 1986, but the total number of Hispanics of that age grew 62 percent. Further, much of the increase came in the late 1970s: for the entire 1976-1986 period, minority enrollment increased 20 percent, but between 1980 and 1986, enrollment increased just 8 percent. For Black students, enrollment actually declined in the 1980s. The declining Black enrollment was accounted for entirely by Black males—Black female enrollments continued to increase. Table 4 shows enrollment in two- and four-year institutions in 1989 by race and ethnicity.

Some additional facts underscore the disturbing nature of enrollment trends. Fewer minority high school graduates go to college than do White graduates, and those numbers have actually been declining since 1976. In 1986, 34 percent of all White high school graduates went on to college, but only 29 percent of Hispanics and Blacks did (see figure 1). In 1976, 36 percent of Hispanic high school graduates and 33 percent of Black graduates went on to college (Quality Education for Minorities, 1990, p. 20). Overall minority enrollment in higher education was 14 percent of the total, far less than the proportion of minorities in the total college-age population. Further, minority students are much more likely than Whites to be in two-year institutions, from which transfer rates to a baccalaureate institution are low. About one-third of White students, 43 percent of Black students, and 55 percent of Hispanic and American Indian students are enrolled in two-year colleges. This differential is extremely significant: while many students receive excellent educations in these two-year colleges, minorities are more likely to enroll in nonacademic or part-time programs, and transfer rates to baccalaureate institutions are estimated at between 5 and 25 percent. Rarer still is the transfer student who successfully earns the baccalaureate degree.

We should note, however, that enrollment is not graduation: attrition continues to plague minority college students. A study of 1980 high school graduates found that six years later, White students had earned bachelor's degrees at twice the rate of Black students and three times

Table 1. Percentage of 1980 High School Sophomores Who Did Not Graduate and Were Not in School

Group	By 1982 (Percent)	By 1986 (Percent)
White	14.8	7.6
Black	22.2	11.4
Hispanic	27.9	18.0
American Indian/ Alaska Native	35.5	27.1
Asian	8.2	2.0
TOTAL	17.3	9.2

Note: Reprinted by permission of the publisher from Quality Education for Minorities Project. *Education That Works: An Action Plan for the Education of Minorities.* Cambridge, Mass., 1990, p. 18. Compiled from data taken from U.S. Department of Education, *High School and Beyond.*

Table 2. Average Scholastic Aptitude Test Scores, Selected Years, 1979-1989

	1979	1982	1985	1987	1989	Change 1979-89
Verbal						
American Indian	386	388	392	393	384	- 2
Black	330	341	346	351	351	+21
Mexican American	370	377	382	379	381	+11
Puerto Rican	345	360	368	360	360	+15
White	444	444	449	447	446	+ 2
Math						
American Indian	421	424	428	432	428	+ 7
Black	358	366	376	377	386	+28
Mexican American	410	416	426	424	430	+20
Puerto Rican	388	403	409	400	406	+12
White	483	483	490	489	491	+ 8

Note: Reprinted by permission of the publisher from Quality Education for Minorities Project. *Education That Works: An Action Plan for the Education of Minorities*. Cambridge, Mass., 1990, p. 19. Compiled from data in College Board, *Profile of SAT and Achievement Test Takers*.

Table 3. Growth in Minority Enrollments in Colleges and Universities, 1976-86 (millions)

	1976	1980	1984	1986	% Change 1976-86
Black	1.033	1.107	1.076	1.081	+ 4.6
Hispanic	.384	.472	.535	.624	+62.5
American Indian/ Alaska natives	.076	.084	.084	.090	+18.0
TOTALS	1.493	1.663	1.695	1.795	+20.2

Note: Reprinted by permission of the publisher from Quality Education for Minorities Project. *Education That Works: An Action Plan for the Education of Minorities*. Cambridge, Mass., 1990, p. 20. Compiled from data in U.S. Department of Education, *Trends in Minority Enrollment in Higher Education, Fall 1976-Fall 1986.*

Table 4. 1988 College Enrollment by Race and Ethnicity

	4-Year Schools		2-Year Schools		All Students	
	Total (millions)	% Total	Total (millions)	% Total	Total (millions)	% Total
White	6.582	80.5	3.702	76.0	10.284	78.8
Black	.656	8.0	.473	9.7	1.129	8.7
Hispanic	.296	3.6	.384	7.9	.680	5.2
Amer. Indian	.042	0.5	.050	1.0	.092	0.7
Foreign/Asian	.599	7.3	.259	5.3	.858	6.6
TOTALS	8.175	100.0	4.868	100.0	13.043	100.0

Source: Jean Evangetauf. 1990. "1988 Enrollment of All Racial Groups Hit Record Level." *Chronicle of Higher Education*, vol. 35 (April 11), p. A-36.

the rate of Hispanic students. In 1986, Hispanic, Black, and American Indian students represented 14 percent of college and university enrollment, but received just 9 percent of all bachelor's degrees, 8 percent of master's degrees, and just 6 percent of all doctoral degrees (see Table 5). It is clear that the higher up the educational ladder one climbs, the fewer minority students one finds.

Because of its importance for its own sake and as a means of learning other skills, the underrepresentation of minorities in mathematics and science are special problems (see Table 6) There has, however, been some improvement in math proficiency by minority students. ETS data, for example, indicate that 9- and 13-year-old Black and Hispanic students improved their science proficiency more than Whites. Science proficiency declined for all 17-year-olds between 1977 and 1982, while all racial groups, especially Blacks, increased their proficiency. The ETS found that the low representation of minorities in math and science had little to do with the ability to perform in these subjects. It was found that "when the requisite quantitative ability was maintained in high school, minority students persisted in science, math and engineering majors at a level equal to or higher than comparable nonminority students" (Education Testing Service, September 1988, p. 18).

Education Myths: Obstacles to Action

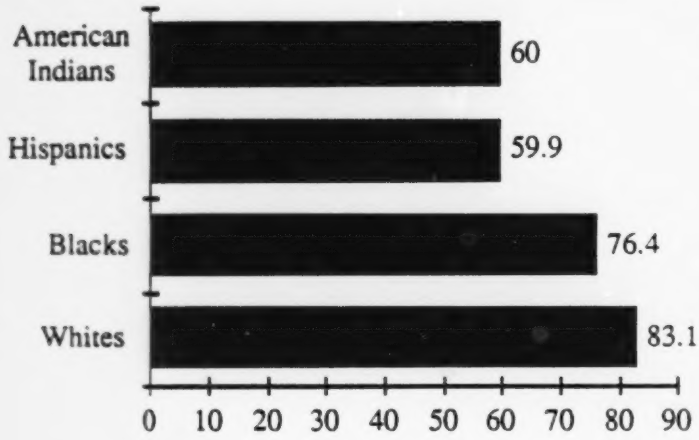
If improving our learning systems and providing educational equity are so important, it is fair to ask why we have not launched an all-out campaign to see that these things happen. The case can surely be made that providing quality education for everybody will determine what kind of country we are going to be and is at least as important as any challenge our nation faces. Nor is there any doubt about the urgent need to make these (and other) changes as quickly as we can in order to avoid the problems that are likely to set in during the first quarter of the 21st century if we fail to act.

A number of factors probably explain the absence of such an all-out campaign. The first is a set of *myths* which seem either to have caused a fatalistic approach to this problem or at least to provide excuses for inaction. These myths include:

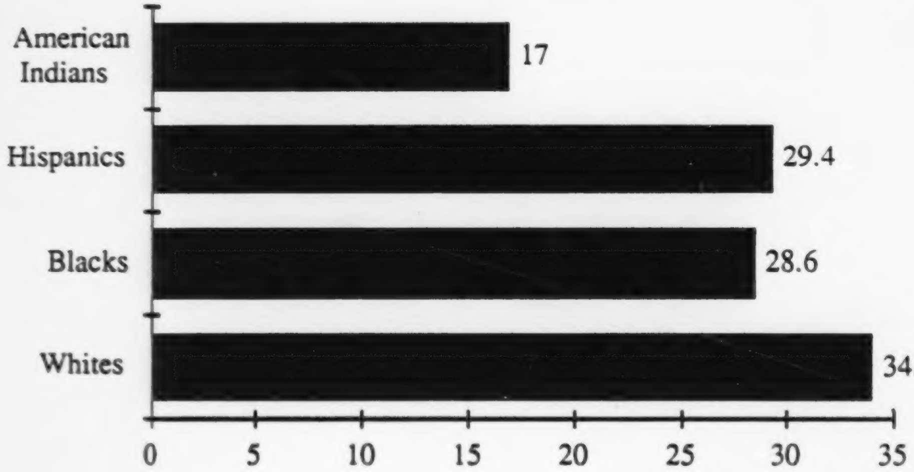
1. Learning is mainly due to innate ability, so there is not much you can do about the learning problems of the disadvantaged. A variant of this idea is that minority and poor children can't learn. There is, however, overwhelming evidence that educational achievement is mainly a product of effective learning systems and hard work, not innate ability (Marshall, Glover and Gronouski, 1988). The idea that learning is due to innate ability or that some students can't learn not only justifies inaction on school reform but also produces such pernicious practices as tracking minority and low-

Figure 1. The Educational Pipeline in 1985

High School Graduates as Percentage of 18- to 24-Year-Olds



College Entrants as Percent of 18- to 24-Year-Olds



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Source: U.S. Census Bureau

Table 5. Minority Degrees Decline along Pipeline: 1986-1987

	College Enrollment	Degrees Conferred		
		BA	MA	Ph.D.
White	9,914,000	841,820	228,870	24,435
Hispanic	624,000	26,990	7,044	750
Black	1,080,000	56,555	13,867	1,060
Asians/ Pac. Isl.	488,000	32,618	8,558	1,097
Nonresident Aliens	344,000	29,306	29,898	6,587

Note: Reprinted by permission of the publisher from Quality Education for Minorities Project. *Education That Works: An Action Plan for the Education of Minorities.* Cambridge, Mass., 1990, p. 22. Compiled from data supplied by the U.S. Department of Education.

Table 6. Science and Engineering Degrees for 1987

	Number of Bachelor's	% of Total	Number of Master's	% of Total
White	332,524	85.4	56,166	86.8
Black	21,345	5.5	2,446	3.8
Hispanic	14,978	3.9	1,993	3.1
Native American	1,568	0.4	222	0.3
Foreign	18,875	4.8	3,891	6.0
TOTAL	389,290	100.0	64,718	100.0

Source: U.S. National Science Foundation. January 1990. *Women and Minorities in Science and Engineering*. Washington, D.C., pp. 144, 145.

income children at an early age, making it a self-fulfilling prophecy that they will have learning problems.

2. We can make it with the kind of two-tier education system we have always had—one for the elites and one for most people. As noted, the day when people could earn middle class incomes with limited intellectual skills is over. A two-tier system will therefore depress overall economic performance, polarize incomes, and weaken democratic institutions.

3. School reform costs too much. There is abundant and persuasive evidence that the personal, fiscal, and social returns to education are very high, which means that it will cost a lot *not* to make these investments (Schultz, 1981; Carnevale, 1983; and Committee for Economic Development, 1987). To take just one example, the direct cost of keeping a person in prison is $20,000 or more annually. Over 80 percent of inmates are high school dropouts. While other factors are involved, the correlation between prison incarceration and lack of educational achievement is stronger than between cigarette smoking and developing cancer (Hodgkinson, 1990, p. 15). Similar correlations exist between lack of education achievement and other social pathologies like welfare dependency, poverty, and teen pregnancy (Berlin and Sum 1988, pp. 27-35).

4. We cannot have educational equity and excellence. In fact, of course, the opposite is the case. We will not have world class learning systems without equity. The greatest improvements in school systems can be made by allocating resources to the educationally disadvantaged, where they will do the most good. There is, in addition, convincing evidence that integrating students of different abilities into the same classes can improve learning for all students. Incorporating minorities also brings important insights derived from their world view and experience—all of which can provide greater intellectual and cultural diversity and understanding. High quality schools for everybody also could create a much needed sense of *national unity*. Schools can provide a common interpretation of our history and a common vision of our future. Schools that segregate along racial or class lines are not likely to provide educational excellence for anybody and certainly not the kind of education needed in a democratic society.

5. Nothing works. Some who accept the need for school reform argue that the problems with our schools are so deeply entrenched that there is nothing we can do about them. This myth is fueled by the false idea that social programs have generally failed. The reality, of course, is that there have been successes and failures. We should learn from the failures as well as such successes as the Job Corps, Head Start, and many others. The problem, however, is not that there are no examples of successful programs or

schools—it is that there are no examples of successful *school systems*. That is why urgent attention should be devoted to fundamental systemic changes.

6. People will not support programs for the disadvantaged. The evidence, however, suggests strong public support for programs to improve education for the disadvantaged; a 1989 Harris poll, for example, found that over 90 percent of Americans support more effective education for the "underclass" (*New York Times*, May 19, 1989). There also is strong public support for a National Youth Service that could improve education by simultaneously teaching young people the value of service and providing tutoring and other services to schools. Attaching GI Bill-type entitlements to national service could, in addition, help overcome the financial barriers that now constitute a serious obstacle to higher education for low-income students.

7. There is no need for special policies to promote educational equity because in America anybody who is willing to work hard can make it. Donald Stewart, president of the College Board, addressed this myth very well: "The idea that a child who is simply smart or able or hard working will somehow get accepted to and complete college is a myth. Race, economic background, and financial ability now stand between a student and a college degree" (Quality Education for Minorities Project, 1990, p. 40). The idea that learning is mainly due to hard work is only partly true; hard work needs to be supplemented with resources and by a supportive learning environment.

There are many other obstacles to quality education for minorities. These obstacles include low expectations of minority students, early tracking, and a perverse distribution of school resources—i.e., most of the resources go to students who need them least and the least to those who need them most.

One of the most serious problems has been the small and declining supply of minority teachers. For generations, public school teaching attracted the best minority graduates of our colleges and universities. With the advent of the civil rights movement, greater opportunities have opened for women who in the past had comprised the predominant portion of the teaching workforce and thus there is a growing scarcity of minority teacher candidates. Other factors affecting this shortage include the present low pay and status of the teaching profession, declining college enrollment among some minority groups, and the institution of new and controversial teacher competency examinations.

By the end of this decade, when the minority student population in schools will exceed the present 30 percent—and will approach 50 percent in most urban areas—minority teachers are expected to comprise just 5 percent of all teachers. Fewer than 8 percent of the students in teacher education programs in 1987 were American Indian, Hispanic, or Black, and this pool is likely to be cut in half by the candidates' subsequent failure to pass teacher competency tests required for licensing in most states (see Table 7). To achieve parity between the teaching force and the student population would require the licensing and certification of 450,000 minority teachers among the 1.5 million teachers needed for our schools during the next five years. Less than half that number of teachers (700,000) are expected to be trained in this period, and only about 35,000 are estimated to be minority, less than 10 percent of the number needed for parity. Clearly, concentrated and sustained efforts over the next decade to produce well-trained minority teachers are required. The reality, however, is that minority students will be taught for years to come by nonminority teachers, a fact that underscores the critical need for ensuring, through training, that all teachers understand and appreciate the culture and language of minority children.

Another very serious obstacle to quality education for minorities has been the tendency for schools to disregard minority children's cultural and linguistic backgrounds. The deficit view of a student's first language and culture all too often results in the completely inappropriate placing of bright children in classes for the learning disabled or in remedial learning groups. As will be demonstrated later in connection with our discussion of school restructuring, student achievement is likely to be most effective when schools relate learning to students' cultural backgrounds and environments.

ACTION PLAN FOR THE EDUCATION OF MINORITIES

The most important part of any plan to improve education for everybody—Whites as well as minorities—must be to fundamentally restructure America's schools. Restructuring could make it possible to create *systems* that incorporate the lessons learned from hundreds of grassroots efforts to improve minority education all over the country. Restructuring also is necessary to demonstrate to the American people that the increased public investments needed to dramatically improve our schools will in fact be translated into higher educational achievement for students—the main standard by which schools should be judged.

UNDERSTANDING SCHOOL RESTRUCTURING

Because of its importance for all students, especially minorities, and because restructuring means different things to different people, we need to be very explicit about what we mean by restructuring.

As I use the term, restructuring means making fundamental changes in the rules, roles,

Table 7. Percentage of Minority Students and Teachers in Public Schools, 1987

	Minority Public School Students	Minority Public School Teachers
Hispanic	9.1	1.9
American Indian/Alaska Native	0.9	0.6
Black	16.2	6.9
Asian/Pacific Islanders	2.5	0.9

Note: Reprinted by permission of the publisher from Quality Education for Minorities Project. *Education That Works: An Action Plan for the Education of Minorities*. Cambridge, Mass., 1990, p. 42. Compiled from data supplied by the American Association of Colleges for Teacher Education.

and relationships in schools. A restructured school would make *student achievement* the main way teachers, principals, and administrators are judged and rewarded. A restructured system would decentralize decisions about how to improve learning to teachers and schools and would increase the involvement of teachers and principals in policy discussions. Policymakers would establish basic *outcome* objectives but would leave decisions about how to achieve those objectives to teachers, principals, parents, child development professionals, and other interested parties at the school and community levels. In addition to outcomes prescribed by elected officials and policymakers, restructured schools would be guided by professional standards based on knowledge and skills developed through research and experience.

Importance for Minorities

No subject is more important to the provision of quality education for minorities than school restructuring. This is so in the first place because minority concerns must be explicitly included in the consensus that is building around the country that schools must be fundamentally restructured in order to improve student achievement. Minority concerns were largely ignored in the early reforms of the 1980s, resulting in negative outcomes for minority teachers and students. Restructuring is important to minorities for a number of additional reasons:

1. Although the traditional factory school model does not serve very many students well, it has been particularly damaging to the disadvantaged—minorities and Whites—whose home backgrounds have not prepared them as well as their more advantaged peers to function in an impersonal, bureaucratic school system.

2. The factory model has repelled many able teachers, but the rate of decline has been much greater for nonwhites than for whites. The model's negative features include stultifying, even degrading, working environments; lower pay and status than for other college-educated professionals; and poor outcomes for most students. Restructuring promises to attract more and better teachers by creating a more professional environment, higher rewards for teachers, and better outcomes for students.

3. Minorities would benefit greatly from restructured learning systems that valued students; that were sensitive to their backgrounds, values, and ways of viewing the world; and that assumed responsibility for their learning.

4. Restructuring would result in fundamental systemic changes that would give schools and teachers greater flexibility and incentives to incorporate the lessons of hundreds of localized ad hoc programs into their systems. We have found numerous individual success stories but no exemplary school system.

Why is School Restructuring Needed?

Restructuring is needed for a very basic reason: the traditional hierarchical factory model is obsolete and unsustainable. It is obsolete because it was designed to meet the standardized basic skills requirements of an agricultural-industrial world. The system still does an adequate job of turning out students who are literate, but it does not turn out very many with the higher order thinking skills required in a world class economy such as the abilities to solve complex problems, analyze abstract knowledge, communicate with precision, learn, deal with change and ambiguity, or work well with other people. Factory model schools teach students to memorize through drill and practice rather to reason using knowledge and skills to solve problems, innovate, and learn. The factory model treats students as objects to be acted on rather than as active participants in the system. The factory model likewise assumes that teachers need not have higher order thinking skills because they, like factory workers, only need to follow the rules laid down from above. The restructured model relies more heavily on participative processes at the point of production. The traditional model ignores individual differences by assuming that there is one best way to learn and teach. It assumes that management's responsibility is to understand what is best for the system and impose it through bureaucracies on teachers and students.

A restructured model, by contrast, recognizes differences in individual experiences, knowledge, and learning and teaching styles. A restructured school system would, therefore, give professional educators the flexibility to develop pedagogical approaches to adapt to diverse circumstances and the learning needs of individual students. Accountability in the factory school means observing the rules and regulations; accountability in the restructured school means improving students' knowledge, skills, and behavior. A restructured model would stress the importance of incentives related to changes in student achievement and behavior. An incentive system is based on the assumption that an organization will get what it measures and rewards. The factory model's incentives are not clear. As David Kearns, chairman of Xerox, has observed, in the American school system if you are very good nothing good happens to you and if you are bad nothing bad happens to you. The system therefore encourages mediocrity. Worse yet, many of the system's incentives are actually perverse, as when schools get more money for labeling children as learning disabled or when funds are allocated on the basis of average daily attendance in some days in a given month, thus providing no incentives to prevent dropouts. The factory model assumes intelligence and achievement to be standardized and therefore measurable by objective tests; the restructured model assumes complex multiple intelligences and achievements that must be assessed through observation and performance. The restructured model assumes further that there is no one best way to teach or learn and therefore emphasizes the importance of having professional educators who can adapt research and experience-based knowledge to particular situations. The restructured model stresses, in addition, an experimental rather than a doctrinaire approach to learning problems. It assumes that learning new approaches requires risks, whereas the factory model assumes that following the rules could be risk free and "teacher proof." The National Center on Education and the Economy, in its 1989 report, *To Secure Our Future*, summarized the principles that should guide restructuring:

> Education, like private industry, can improve by restructuring operations following some very simple principles. First, go for quality and build it in the first time wherever possible. Second, reward success in producing quality. Third, when a system of real accountability is in place, let the people on the firing line figure out how to get the job done, and get rid of as much of the bureaucracy and as many of the intervening rules as possible (National Center on Education and the Economy, 1989, p. 6).

A more participative system requires fewer monitors and bosses, but it requires more technical assistance, in-service training, and logistical support. Teachers and principals whose only experience is in the factory schools will need training and technical assistance in adjusting to a more participative model where they have more freedom and responsibility for student performance. The traditional bureaucracies should therefore be transformed to provide more of these supportive services.

We have argued that the factory school model is unsustainable. This is so for a number of reasons. First, the outcomes of the system are grossly inadequate for the needs of a more dynamic and competitive world. We spend less on elementary and secondary education relative to GDP than most other industrial countries and student achievement, especially in mathematics and science, is below that of our major competitors and even below that of some developing countries. Our dropout rate is about three times as great as that of our principal competitors. Secondly, we are unlikely to have the resources, especially the highly qualified teachers, to even sustain present student-teacher ratios. This is so because the supply of teachers is shrinking at the very time student enrollments are rising because of an increase in immigration and entry into schools of the large number of children born to the baby boomers.

The factory model is unsustainable, in the third place, because it could not meet the requirements for a competitive system even if significantly greater resources were available. While we might teach to standardized tests and improve student learning achievement according to this criterion, we cannot gain very much better outcomes in terms of higher order thinking skills by enlarging an inefficient system. Indeed, the public schools must demonstrate greater efficiency and accountability before the political system will be willing to provide adequate resources to produce a first-rate school system.

The Comer Schools

One of the best examples of how restructuring can improve student performance is suggested by James Comer's work in New Haven, Connecticut (Comer, 1988, p. 45). Beginning in 1968, Comer, a professor of child psychiatry at the Yale University Medical School, and his colleagues at the Yale Child Study Center developed a model that greatly improved the performance of two schools with the lowest achievement and worst attendance records in the New Haven school district. The combined enrollment of these schools was 99 percent Black and 70 percent were welfare recipients. Fifteen years later, the socioeconomic makeup of the schools was unchanged but the academic performance of the two schools had surpassed the national average, they ranked third and fifth among New Haven's 26 schools in composite fourth grade test scores, and both had superior attendance records. Comer reported in 1988 that there had been no serious behavior problem in either school for over a decade. A follow-up study tracked 24 students through three years in a Comer school and compared them with a control group who spent the same period in another New Haven school. The Comer school students were more than a year ahead in reading and mathematics. The success of the New Haven schools caused Comer's model to be adopted in over 70 schools around the country by 1990. At least three colleges of education have incorporated the Comer model into their programs and the Rockefeller Foundation awarded him $15 million to expand the model into other places.

EDUCATIONAL EQUITY: PRINCIPLES AND GUIDELINES

The QEM Action Plan's proposals proceed from principles to guidelines to recommended strategies. That is, certain overarching values must connect minority children, schools, and communities to the nation's common future. The principles and guidelines below offer a renewed vision of America in which all children—minority and nonminority—can participate.

The first overarching principle that must drive education for minority children and youth is the need to *keep educational options open* throughout the learning life-cycle that extends from early childhood and continues throughout life. The second principle is that schools must be responsive to the needs of minority children.

From these principles, a new educational system can be envisioned. The design of that system must rest on the belief that a climate for making choices should be based on the following ten guidelines:

> **Intervene early.** Early intervention in nutrition, parent education, day care, and preschool education is essential; it has lasting impact and is cost-effective.

Create an environment for success. Prepare minority children for academic success and *expect them to achieve it.* Schools and colleges must be recognized and rewarded for their success in educating minority children and youth.

Support what works. Numerous programs exist in local districts that have successfully solved difficult problems for minority youth. Other programs at other stages in the learning cycle work and should be expanded.

Respect and value the culture of the child in the curriculum and in the school. The educational system must respect the diversity of its students by including their cultural and language contributions.

Strengthen existing bonds and forge new linkages among all elements of the education system that serve minority students: between schools and colleges; between two- and four-year institutions; between undergraduate and graduate institutions; between schools and work places; and between schools and homes.

Create exciting, nontraditional and life-long learning opportunities for minority youth. Provide more after-school, summer, and vocational opportunities; provide opportunities for continual reentry into the educational system; and create new models that encourage school professionals to deal effectively with students' physical and emotional needs, both at school and at home.

Make the best teachers available to those who need them the most.

Coordinate existing intervention programs by strengthening the bonds between the schools and other service delivery systems in low-income communities through implementation of school-based services. Health care, career counseling, housing, recreation, social services, public assistance, and other services continue to operate in relative isolation from the schools.

At the level of **higher education,** the nation's public and private institutions and community colleges must become more hospitable to minority students. After a promising start 20 years ago, the recent record of these institutions in recruiting minority students, affirming their diversity, assisting in their transition from two- to four-year institutions, and helping them enter the academic mainstream of graduate education, is dismal. These institutions bear a special responsibility for introducing minority students to a process of education and achievement that is life-long, incorporated into a rhythm of learning that is part of the cycle of their lives.

Colleges and universities must be prepared to intervene at an earlier stage in the education of minority students. This may require interventions to diagnose problems and develop specialized solutions in cooperation with teachers at the pre-college level. Universities must also provide supportive environments for minority students enrolled on their campuses. They must have policies and procedures in place to deal effectively with potential racial and ethnic conflict. Establishing first class colleges and universities will therefore require considerable attention to racial and cultural issues. Achieving this kind of excellence will, above all, require dedicated leadership by governing boards, administrators, and faculties. Incentives to provide quality education for minorities must be embedded in universities' rules, relationships, and reward structures. Seriousness about educational equity can be demonstrated by making the concern for quality education for minorities an integral part of the institution's leadership structure and by not relegating this important function to offices not in the central administration.

We must be equally concerned about that half of our 16-to-24-year-olds who do not go on to college and who flounder in a labor market that is not well structured to serve them. America's **school-to-work transition** is the weakest of any industrial nation in the world. It requires attention from business and union officials, policymakers, and educators alike.

STRATEGIES FOR ACTION

What is required, however, is not principles and generalities, but actions to create the structure, policies, and resources to dramatically improve minority education. The *QEM Action Plan's* recommendations are designed to do that. They proceed on the assumption that actions are needed to improve the educational achievement of minorities at every stage in the lifetime learning cycle.

Goals

The QEM *Action Plan* has six main goals, with fairly specific suggestions for how to meet each goal. The goals are

1. to ensure that minority students start school prepared to learn.

2. to ensure that the academic achievement of minority youth is at a level that will enable them, upon graduation from high school, to enter the workforce or college fully prepared to be successful and not in need of remedial education.

3. to significantly increase the participation of minority students in higher education with a special emphasis on the study of mathematics, science, and engineering.

4. to strengthen and increase the number of teachers of minority students.

5. to strengthen the school-to-work transition so that minority students who do not choose college leave high school prepared with the skills necessary to participate productively in the world of work and with the foundation required to upgrade their skills and advance their careers.

6. to provide quality out-of-school experiences and opportunities to supplement the schooling of minority youth and adults.

The Role of Minority Community Leaders

Because of its importance to our nation's future, all Americans should assign high priority to educational equity, but the minority community has a special responsibility for improving the education of minorities. This is so both because minorities understand their problems better and will give them higher priority than anyone else. The most sustaining and effective pressures for change are likely to come from those who are most seriously affected by a problem.

Roles, Responsibilities, Goals, and Recommendations

As noted, fulfillment of the goals we recommend will require leadership and action by people at every level. Presidential leadership and congressional support are critical. The President not only needs to use his "bully pulpit" to create a sense of urgency commensurate with the gravity of the national crisis we face, he also must view the education crisis as a national high priority problem to be solved, not simply endured or sympathetically acknowledged. Only the President can focus the kind of national attention on this problem that it deserves. The President can, in addition, propose congressional action to provide the resources and programs needed to achieve educational equity. He also should create a National Human Resource Development Council in the White House on a par with the Council of Economic Advisers and the National Security Council. The National Human Resource Development Council could bring together federal resources from the agencies and departments related to the development of human resources. The military, for example, has considerable experience with minority recruitment, training, education, and retention. The lessons learned from these experiences could be modeled and made available to educators and policymakers at all levels.

The states have major responsibility for education. The governors should therefore form Educational Equity Councils in every state to coordinate state-level activities, to provide guidance, resources, and technical assistance for restructuring, and to help schools and colleges do all of the things needed to make quality education an integral part of their incentive structures.

Financing

It will, of course, be necessary to cost out the recommendations in the *QEM Action Plan*. In some cases, the budget costs of these recommendations would be as easy to estimate as for other public expenditures. We know, for example, that the Special Supplemental Food Program for Women, Infants, and Children (WIC) costs about $118 for each full-weight baby born at term and that doubling participation in child nutrition programs would cost about $3.45 billion in 1988-89 dollars. Calculations for all of the recommendations have been made.(Quality Education for Minorities Project, 1990, pp. 83-100). However, the important consideration is not the annual budget costs, but their value as *investments in our children*. As the Committee for Economic Development has demonstrated in *Children in Need* (1987), it is cost effective to find what works. It estimated, for example, that $1 invested in WIC and prenatal care returned at least $3 in easily identifiable costs like short-term hospital stays and the cost of low birthweight infants. Preschool education returns $4.75 for every dollar because of lower costs of special education, public assistance, and crime. An investment of $1 in compensation education could save $6 in the cost of repeating a grade. The Job Corps returned $7,400 per participant for each $5,000 in program costs. Numerous sophisticated studies have demonstrated high personal, fiscal, and social returns to education. These returns would be even higher in schools restructured as we have suggested.

There could, of course, be some cost savings in reallocating administrative costs to support services for schools that are more self-managed and therefore require less oversight and management, but more support services and technical assistance. It therefore seems reasonable to assume that a restructured school system might cost only 10 percent more than the present system, or an additional $20 to $30 billion paid for mainly at the state and local level. There are, of course, serious short-run state and federal budget problems, but the long-run improvement in productivity and the quality of work life for all Americans would justify an investment of that magnitude.

Chapter 2. Parent-Child Interventions for Children Age Zero to Three: The Role of the States

by

Sally J. Means*

INTRODUCTION

This study is part of a larger effort to develop a blueprint for action to improve education for minorities throughout the United States. Recognizing that minority children arrive at school with a significant disadvantage, proposals to improve minority education begin at birth or earlier, with prenatal care. We should note, however, that not all minority children do poorly in school. School performance is highly correlated with socioeconomic status. Poor children do less well in school than their middle-class peers. And a large percentage of minority children are poor; 43 percent of Black children and 38 percent of Hispanic children live in poverty (Harrington, 1987). A study by the President's National Commission on Excellence in Education found that nearly 40 percent of all minority students are functional illiterates. In many urban areas, 35 to 50 percent of all minority students drop out before graduation (Rodgers, 1986).

Children living in poverty are not only disadvantaged in terms of school performance. Because their mothers are often teenagers and malnourished, they have a good chance of being born weighing less than 5.5 pounds. Low-birthweight babies are almost 40 times more likely to die during their first four weeks of life than the normal-birthweight infants. Low-birthweight babies who survive are likely to suffer some sort of neurologic or physical defect. Black newborns are more than twice as likely to weigh less than 5.5 pounds as White infants (Institute of Medicine, 1985).

Children living in poverty are likely to have inadequate health care. A report by the National Association of Children's Hospital and Related Institutions released on March 1, 1989, revealed that the status of children's health in America has deteriorated in the past decade, and is in a state of crisis (Martinez, March 2, 1989, p. 1). Immunization rates for children under two years of age are falling. Only 60 percent of children under age four have received the complete basic series of immunizations. Almost 25 percent of pregnant women do not receive any prenatal care in the first three months of pregnancy. In most instances, the health gaps among racial and ethnic groups have grown wider. Black women are more than twice as likely as Anglo women to receive no prenatal care, while Hispanic and American Indian women are at even greater risk of receiving inadequate care.

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In addition to poor health care, the child living in poverty is likely to live in a family in which unemployment, marital stress, single parent status, social isolation, violence, depression, and despair at times are characteristic. These factors are known to contribute to the incidence of child abuse and neglect. The same study on children's health reported that the number of abuse and neglect cases rose 55 percent between 1981 and 1985, while deaths from child abuse climbed by 23 percent nationally between 1985 and 1986.

There have been efforts to intervene during the first three years of life to help families in crisis, to provide crucial services, and to help mothers be better teachers of their own children. Some programs have been concerned with the child's development, others have focused on family members as well. Some programs have been center-based, others have sent home visitors to work with the family. Some have provided only teaching, others have been comprehensive in scope. In the 1960s, many such programs were located in universities and had a strong research component. About 15 years ago a grass-roots movement of family support programs began, and the number of these community-based programs has grown continuously.

Data from longitudinal studies of early childhood educational programs in the 1960s and early 1970s showed that these programs could have an effect on school performance, employment rates, and delinquency rates in the teenage years. Intervention in the early years has come to be accepted as a viable strategy to prevent problems from developing later that are then more costly to address.

The business community is very interested in intervention programs because large numbers of young people entering the labor market today lack the knowledge and skills necessary to work in technology-based industries. Without these skills in its workforce, the United States cannot be competitive in a global economy.

The demand for programs to help children and families is increasingly directed to the state and local levels of government. Since the early 1980s, there has been a decrease in federal funds for all social services. State governments have become increasingly interested in providing parent education programs for young children and their families with some pioneering programs already underway. Corporations, not-for-profit agencies, and local governments are joining together in creative ways to assist families with young children. These programs are winning popular support and competing for increasingly scarce resources at all levels of government.

The purpose of this paper is to examine various types of programs developed to intervene in the lives of children in the first three years, to look at the role of the states, and to make recommendations. The next section reviews research-based programs. It is followed by a section on community-based programs. The role of the states is then considered, followed by some conclusions and recommendations.

RESEARCH-BASED INTERVENTIONS

Attitudes about intervention programs have changed since the 1960s and 1970s, when most research-based intervention programs for children from birth to three were funded as part of the "war on poverty." The primary assumption underlying these programs was that if lower socioeconomic mothers could be taught how to interact with their children to promote better child development, the children would arrive at school better able to compete intellectually with middle-class children. Most of these interventions measured their success by intelligence test score gains in an experimental group compared to a control group of children who did not receive the intervention. They sometimes included efforts to support mothers through home visitors, group meetings with other mothers, and health care, but these aspects of the programs were not emphasized because the primary outcome measure was scores on intelligence tests. One of the early programs, the Yale Child Welfare Research Program, philosophically had more in common with existing community-based programs, which empower parents to take control of their own lives and thereby improve the lives of their children. The conception of the field in which the development of the child occurs has expanded to include the family, the community, and society. Opinions about the proper measures to evaluate intervention programs have changed, due in part to the successes of the earlier programs, which turned out to be in areas other than intelligence test score gains. In this section, we will describe some of the early programs that were especially successful and have influenced the design of later programs.

It has been established that there are consistent differences in the behavior of middle-and low-socioeconomic mothers (Farran and Haskins, 1980). Researchers used their understanding of these differences to design early intervention programs. Tulkin and Kagan (1972) found that in working-class homes, babies experienced more noise, greater crowding, more interactions with many adults, and more time in front of the TV. Lower-class children had less opportunity to explore and manipulate objects, they were more restricted, and they had fewer toys that their middle-class peers. Ramey et al. (1982) observed the physical, attitudinal, and social environments of disadvantaged families that they worked with over ten years and found very different ecologies between the advantaged and the disadvantaged that led, in their opinion, to very different opportunities for finding life satisfaction and contributing to society. Lower socioeconomic status homes were characterized by relatively disorganized environments and lacked age-appropriate toys and opportunity for variety in daily stimulation when infants were six months of age.

The homes tended to be poorly lighted and to have a high density of people. The houses were crowded and had one or more members who smoked. By the time their infants were six months old, lower socioeconomic status mothers scored as more authoritarian and less democratic in their child-rearing attitudes. They perceived themselves as more controlled by external forces than as internally controlled. The researchers concluded that there is less creative flexibility in child rearing and more pessimistic fatalism in the environment of the disadvantaged child compared to the advantaged child. Mothers of disadvantaged infants tended to be less responsive verbally and emotionally and more punitive and less involved with their infants when observed within their own homes.

Brandley and Caldwell (1976) found that aspects of the home environment during the first two years show a strong relationship to mental test performance at three years and fifty-four months. The strongest effects were found on measures of the emotional and verbal responsivity of the mother, maternal involvement with the child, and provision of appropriate play materials.

> It appears that verbal stimulation involving the labeling of objects and relationships may provide the kind of basis needed for subsequent development of specific verbal abilities and for the formation of concepts. It also appears that parents who actively encourage achievement by their children during the first two years may facilitate continuous cognitive striving by their children throughout early childhood. Finally, it appears that mothers who interact frequently with their children and who are responsive to their emotional needs may develop in their children a sense of trust and enjoyment in the environment. The sense of trust may allow children to behave in accordance with motives for competency and curiosity, thus facilitating cognitive growth (Brandley and Caldwell, 1976, p. 1174).

Golden and Birns (1983) reviewed studies on infant intelligence and concluded that tests based on nonverbal measures showed no differences between children of different classes. Cognitive measures that involve language, however, related to social class as early as the first year of life, and starting at two years of age such verbal measures were highly correlated with children's performance on standard intelligence tests. Ramey et al. (1982) also concluded that language environments are a major difference between disadvantaged and advantaged children and that this is linked to the child's subsequent general intelligence and, presumably, to school achievement. Their intervention program, and those of most others, was based on teaching parents to play with the child and interact with him in ways designed to promote language development.

One particularly successful infant program was the Florida Parent Education Project, conducted by Ira Gordon and his colleagues (Jester and Guinaugh, 1983). This program was conducted between 1966 and 1970 and made contact with 550 families in the area around the University of Florida at Gainesville. Parent educators, who were women from the community with characteristics similar to those of the parents they were visiting, made weekly visits to the homes of the study families and demonstrated teaching techniques to the mothers. When the children were between two and three years of age, they spent two hours, twice a week, in a home learning center. The results showed that the children in the program did better on language, memory, and perceptual-motor tasks; and, that the more training the children had, the better they performed regardless of the age they entered the program. Three to five years after completing the program, children in the experimental groups scored seven or eight points higher in IQ than did control children. Six years later, 39 percent of the experimental group were reading at grade level, compared to 8 percent of the control group (Guinaugh and Gordon, 1976).

Another successful program was Levenstein's mother-child home program. (Levenstein, O'Hara, and Madden, 1983). This program was considered by the American Institute for Research in the Behavioral Sciences to be one of the ten most successful early intervention programs in the United States (Golden and Birns, 1983). The model program was begun in 1967 and was carried out for 12 years. It has been successfully replicated throughout the country. The basic program consists of 46 semiweekly visits by toy demonstrators in each of two school calendar years starting when the children are two years of age and continuing until they are four. This was considered to be an optimal age because of the rapid growth of language during this time and because children are still quite emotionally involved with their mothers. At first the toy demonstrators were master's level social workers. Later they were replaced by mother-participants with a high school education or less. The latter were judged to be as effective as the former. By first grade there was about a 15-point IQ difference between the children in the program and a control group. The children in this program maintained their gains three years after their participation ended. This was attributed to the fact that the program worked not only with the child but with the mother-child dyad, changing their patterns of verbal and social interaction at a critical period in the child's intellectual development.

The Abecedarian Project at the Frank Graham Center of the University of North Carolina was begun in 1972 to intervene with infants and children believed to be at high risk for school failure. Most of the children entered the program at six weeks and stayed until they entered public school kindergarten. The program offered quality day care for children for 50 weeks of the year. It included medical care, including periodic assessments that the parents attended and at which they received information and counseling. Mental test scores after the age of 12 months showed significant differences between the program children and a control group (Ramey, et al., 1982). In discussing their findings, Ramey et al. concluded that the intervention prevented children from declining in development rather than causing a higher level of development. This somewhat subtle difference in perspective is similar to current community-based programs, who view themselves as preventing decline rather than filling up a deficit. The deficit model of intervention has been replaced by a prevention model.

IQ gains for children who participated in the early programs often did not hold up after two or three years of public school. This led to disillusionment with early childhood programs and a sense that the problem was beyond remedy.

Longitudinal data on the children who attended the Perry Preschool Project in Ypsilanti, Michigan, by contrast, showed remarkable differences between the children in the program and the control group children long after the program ended. These "sleeper effects" completely changed the public conception of the value of early childhood programs. Scores in reading, language, and arithmetic began to exceed those of the control group beginning at grade three. By grade eight, the children who had been in the program were more than a year ahead of the control group. By the time they graduated from high school, 19 percent had required special education services for at least one year versus 39 percent of the control group. The preschool group was more likely to find and hold jobs or enroll in college, and less likely to be on welfare or to be arrested (Schweinhart and Weikart, 1980). One result of this information was awareness that IQ measures alone were not the way to evaluate the success of early childhood programs.

As noted earlier, one study that did take a much broader view of intervention was the Yale Child Welfare Research Project carried out in New Haven, Connecticut between 1967 and 1972 (Rescorla, Provence and Naylor, 1982). These researchers reasoned that since most successful preschool programs involved parents - parents, rather than their children, should be the focus of the program. The program's underlying assumption was that chronic stress is a significant impediment to effective family functioning, and that poverty both increases the likelihood of such stress and restricts the resources available to families to cope with it. The investigators did not view severely impoverished families as being different in some psychological way from families with more resources. The families in this program received a comprehensive and intensive set of social and medical services for the first 30 months following their child's birth. A social worker visited the home to help solve immediate problems and provide a liaison with other service providers in the immediate project and in the community. A pediatrician provided medical care, and a day care program provided very high quality care. The aim of the intervention was to strengthen parents as caregivers and problemsolvers.

A ten-year follow-up found that intervention mothers were more likely to be self-supporting and had higher educational attainment and smaller family sizes. Intervention children had better school attendance, and boys were less likely to require special school services. The researchers estimated that each of the 15 control families received an average of $40,000 more than the experimental families in welfare and school service costs in the single year in which follow-up data were gathered. The costs saved by the intervention were thus considerable.

Findings of increased educational attainment for mothers and smaller family size were not apparent in the years immediately following the intervention. The researchers speculated that the intervention mothers tended to delay subsequent childbearing (a median of nine years) before having a second child. Having fewer children to care for and only one preschooler at home made it easier for a mother to further her education or seek employment. The authors suggested that women with limited vision were helped to see their potential more fully as encompassing both employment and motherhood (Seitz, Rosenbaum, and Apfel, 1985).

Two other successful intervention programs for children from birth to three were not conducted under university auspices. One was part of the Head Start Program, and one was developed in a public school system. Incidentally, both of these programs were recently identified as model preventive programs with well documented features and solid outcome finds by a task force of the American Psychological Association (Price, et al., 1989). Also identified as a model program in this study was the Abecedarian Project at the University of North Carolina described above.

In the late 1960s, 37 Parent-Child Centers were established as a downward reach of the Head Start program. The centers were intended to provide parent education and operated with a number of different types of programs combining home visits and center-based programs. They served mothers with children between birth and three years of age. Three Parent-Child Development Centers (PCDC) were established as research and evaluation centers in New Orleans, Birmingham, and Houston. The Houston PCDC program was designed to serve low-income Mexican-American families (Johnson, 1975). It was a two-year program with the goal of improving the public school competence of Mexican-American children. A secondary goal was to promote the mental health of the participating families and reduce the incidence of behavior problems among the children. The program included biweekly home visits to the mother and infant in the first year, weekend sessions for the entire family, English language classes for the mothers, medical examination of the child, assistance in gaining access to other community resources, and participation in center activities four mornings a week in the second year. Center activities included homemaker lessons in sewing, buying strategies, and health and safety in the home. Group discussions were held on child care and management. Mothers also practiced the techniques discussed with their children, and some of these episodes were videotaped. The entire program required about 500 hours of participant time over the two-year period. Results showed that program mothers were more affectionate, used more praise, and encouraged more of their children's verbalizations. They provided more appropriate play materials, were more emotionally and verbally responsive, and more likely to avoid restriction and punishment. A follow-up study found that five-year old-boys in the control group were more destructive, overactive, negative attention-seeking, and less emotionally sensitive than program boys and girls and control girls (Johnson and Breckenridge, 1982). A current study (Johnson and Walker, in press) reports that with the children in second to fifth grade, participating children show fewer aggressive, acting-out behaviors and are less hostile and more considerate than children in control groups. In addition, fewer program children were still in bilingual classes. A study currently in progress has located 1,100 children who participated in the PCDC program in all three sites and is collecting data for a follow-up study, which will look at the children ten to fourteen years after the end of the program.

The Brookline Early Education Project (BEEP) was begun in 1972 in the public school system of Brookline, Massachusetts. The project worked with 285 families whose children were born in the months before the program began. There were three levels of program intensity offering different levels of home visits, meetings, and child care. Until the child turned three, services were provided at a center that was not part of the public school buildings. All children enrolled in BEEP received periodic health and developmental exams. Weekly play groups were held for small groups of children beginning at age two; and, at ages three and four, BEEP participants had the option of a daily morning prekindergarten program. Results from observations of children's classroom learning behaviors showed that BEEP participants did better than the control group children in working independently, following directions, resisting distractions, completing work successfully, getting along with other children, and involvement in classroom activities. The overall advantage was consistent regardless of the background characteristics of the children and for boys as well as for girls. The BEEP participants had fewer reading problems in second grade than comparison children. Parents of program children had more relevant interests with their child's second grade teacher as well. Cost effectiveness analyses showed that more intensive versions of the program were more effective for children whose parents were not highly educated (Pierson et al., 1983).

There can be no doubt that intervention programs that work with parents and children in the first three years of life can improve a child's chances for getting along in school. Participation in programs that offer comprehensive services can have a far-reaching effect on family functioning, with benefits to society in terms of lower costs for health care, welfare, and the criminal justice system. The programs described thus far have been well-designed programs with research and evaluation components working in relationship with a large funding source, a university, the federal government, or a public school system. They were conducted during a time when there was money available to fund experiments in education as demonstrations that could be replicated elsewhere. Today the federal government has a huge deficit, and state and local governments are assuming the role of provider of services to a much greater degree than was true in the past. State and local governments are also strapped for money and often have heavy debt payments to cover. Taxpayers have not been in the mood to increase taxes for most government servicers other than education. It is interesting that in this environment, a strong grass-roots movement has been identified in which community-based organizations, often operating on a shoestring, are providing support to families in need of services. These family support programs are the subject of the next section.

COMMUNITY-BASED PROGRAMS

Over the past 15 years, programs at the local level have sprung up to provide for families in need. They operate in all types of settings and may provide direct services or information and referrals to families who do not know how to get services to which they are entitled. In 1981, many of these programs organized the Family Resource Coalition (FRC). The goal of the FRC is to expand the number of family support programs available to parents before their needs become acute and costly, and to continually improve the quality of community-based services to families.

The first book on the family support movement, *America's Family Support Programs: Perspectives and Prospects*, edited by Sharon Kagan, Douglas Powell, Bernice Weissbourd, and Edward Zigler, appeared in 1987. In a foreword to the book, Urie Bronfenbrenner wrote:

> Local initiatives, building on local resources, have arisen in all sections of the country and have forged new linkages between families and other community institutions, notable schools, social agencies, neighborhood organizations, business and industry, and units of local government (Kagan et al., 1987, p. xiii).

In this book and elsewhere, scholars find a theoretical basis for family support programs in an ecological approach to child development such as that articulated by Urie Bronfenbrenner in his 1979 book, *The Ecology of Human Development: Experiments by Nature and Design.* Bronfenbrenner conceives of the ecological environment as extending far beyond the immediate situation directly affecting the developing person to connections between other persons in the setting and to linkages between settings including those in which the developing person may never enter, but in which events occur that affect his immediate environment. According to Bronfenbrenner, the proper focus of child development is development-in-context. Family support programs have an ecological approach because they consider the child in the context of the family, the community, and the broader society. Elements common to family support programs are peer support, the opportunity for reciprocity, a belief in prevention rather than treatment, and intervention before a problem emerges. These programs typically provide a variety of services to meet the diverse needs of families. They operate from a nondeficit orientation and build on each family's strengths. They are at the frontier of social service delivery (Kagan and Shelley, 1987).

A major difficulty for family support programs is establishing financial stability. In 1988 the Family Resource Coalition published a resource guide, which lists 72 programs around the country (Levine, 1988). The guide lists only those programs that have demonstrated stability over time, include an evaluation component, and have been successfully replicated. The 1988 guide includes only 41 of the 72 programs listed in an earlier edition in 1983. Presumably the others have ceased to operate. Given that there are thought to be hundreds and possibly thousands of family support programs, the fact that only 72 meet the criteria illustrates the difficulty of securing permanent funding.

One Texas family support program which is listed in the resource guide is Avancé (Spanish for "advancement" or "progress"). Avancé is illustrative of aspects common to many community-based programs. It was begun by Gloria Rodriguez in San Antonio in 1973 to prevent and alleviate the problems of illiteracy, poor school performance, high dropout rates, teenage pregnancy, child abuse and neglect, mental health problems, substance abuse, crime and violence, poverty and government dependency (Rodriguez, 1985). Ms. Rodriguez is a talented, dedicated leader who remains with the program today. She has had to devote a great deal of time to raising money. That task did not become any easier even after the program received national publicity beginning with an editorial in the *New York Times* in 1987. Most of the funds for Avancé come from the city—about 75 percent of the approximately one million dollar annual budget. A small component of the program, funded by the Texas Department of Human Services, provides in-home services for families who are in danger of having their children removed due to abuse or neglect. Program evaluation has consisted of measures of parents' attitudes and skills before and after they attend the nine-month program (Rodriguez, 1983). The Carnegie Foundation has funded a three-year evaluation of Avancé that will measure the short-term results of the program and furnish data for a follow-up study that could provide information about school performance. The Avancé program is open to families in the community that have a child under four years of age. Mothers attend a series of toy-making classes, and classes on child development, health, and nutrition. Children are cared for on the premises while the mothers attend classes. Mothers in the program must help in the child-care program, which is under the direction of a child-development specialist. Mothers receive home visits in which video tapes are made of parent-child interaction for viewing in class. The Avancé program has grown and evolved to meet the changing needs of parents in the community, and to respond to the needs of funding sources. Classes leading to a GED and English as a Second Language classes are available on-site. Avancé provides referrals to other agencies and job placement counseling.

Although there have been no longitudinal studies documenting program outcomes, individual success stories abound. Several newspaper articles describe community and business awards won by graduates of the program. Most of the current staff of the program are former participants.

A grant from the General Foods Corporation has enabled Avancé to replicate its program in Houston beginning in 1989. The response to the program by the public schools and the ease with which the program got underway amazed the directors of Avancé in San Antonio. They remember how slowly the original program was developed by door-to-door recruiting. The public schools in San Antonio allow Avancé personnel to present community workshops in some schools but have not shown an interest in working closely with the program. In Houston, an introduction by a school board member led immediately to two principals asking the director to set up programs in their schools. Two months later two sites serving 87 mothers were in operation. It may be that school personnel in Houston have a broader conception of the role for the school in the community. The Houston schools are using their resources to offer a service desired by the community that goes well beyond the traditional role of the public school.

A major weakness in community family support programs is the absence of good evaluation studies. The programs themselves do not have funding for sophisticated research and sometimes do not even systematically collect data on the families served. In addition, there are few standardized measurements for assessing the ecological continuum, and few researchers are willing to abandon standardized measurements altogether in favor of program-specific impact measurements (Jacobs, 1988). Consequently little information is available about which programs work for whom, and when, how, and why they work (Weiss, 1989).

> It is unfortunate that there is so little pertinent research about program and parent interactions, about staff and parent attitudes toward each other and the like, that would help in identifying the crucial features and practices of nondeficit programs and in answering the question of whether these programs are in fact empowering. Overall the field is now long on prescription and short on description and analysis of nondeficit partnership and of multidimensional program models. Evaluators need to broaden their concept of evaluation to include studies of implementation and program processes (Weiss, 1989, p. 145).

Francine Jacobs (1988) has proposed a "five-tiered approach to evaluation" which describes tasks to be done and data to be collected for different audiences (funding agencies, community groups, program staff, academic research communities, and policymakers) at five different stages in the development of a program.

One researcher used systematic observations of group discussion, structured home interviews with mothers, observations of mother-child interactions, and staff records to evaluate a parent support program (Powell, 1988). The findings have implications for programs aimed at low-income parents. This study found that parents take from a program what they need. Therefore, the author concluded, a program should not prescribe a model or ideal pattern of participation. The findings supported the usefulness of comprehensive programs for low-income populations. Ancillary services were found to be major sources of assistance to many mothers. High-stress mothers made greater use of the staff and were slower to integrate into the groups. Staff might plan to work individually with high-stress mothers rather than leave them to the more diffuse resources of a discussion group. This researcher also found that in his program, parents of a first born were more likely to drop out of the program than parents with more than one child.

> The study has left us with a healthy respect for individual differences in program participation as well as a commitment to evaluation research paradigms that consider interactions between program participants and parent characteristics (Powell, 1988, p. 282).

Community-based programs provide services to families and children, but they are short of funds and have a short life expectancy. With state and local governments increasingly taking on the responsibility of providing social services, it is logical to hope that public support for such programs might be found at that level. In fact, many states are very interested in programs that support young children and their families. Activity at the state level is discussed in the next section.

THE ROLE OF THE STATES

The Harvard Family Research Project is conducting an ongoing study of the formulation, implementation, and institutionalization of state-sponsored family support and education programs. Four such programs are described in a recent article by the director of the program, Heather Weiss (Weiss, 1989, pp. 6-19).

The states of Minnesota and Missouri have passed legislation that provides for state-wide enactment of early childhood programs. The Early Childhood Family Education (ECFE) program in Minnesota began in 1975 as a pilot project and was established on a state-wide basis in 1984. The program's central goal is to enhance and support the competence of parents to provide the best possible environment for healthy child development and a strong family. The program is available to anyone with children between birth and five years of age. Local programs vary somewhat but in general offer parent education, group discussions, home visits, and special services for particular populations. Meetings may be held in churches, housing projects, or other community centers. Staff members include early childhood educators, child development and family life specialists, nurses, and consumer home economists. Minnesota colleges have cooperated with the ECEF program in developing a licensing program for parent educators. Lois Engstrom, ECFE Specialist with the Minnesota Department of Education, estimates that the program reaches 90 percent of those who are eligible and that during the last year, 25 percent of the participants had incomes at or below the poverty level.

The Parents as Teachers (PAT) program in Missouri relies on a well-defined curriculum, which was developed with the help of Burton White, who directed the Harvard University Preschool Project, a thirteen-year study of early development (1965-1978). The PAT program was begun in several sites in 1981 to demonstrate that education can get children off to the best possible start in school—and life—through a partnership between the school and home. PAT offers home visits, group meetings, screening, and a referral network. The program is open to anyone with children between birth and three years. In 1984, legislation was passed to set up the programs in districts throughout the state. PAT has established a national center to train parent educators.

The states of Connecticut and Maryland have more recently (1986) created smaller programs in state social agencies to reach children and families. In Connecticut, the Department of Children and Youth Services has funded ten state agencies to set up center programs in agencies around the state in a local-state partnership effort. Each center must serve all parents of children one to seventeen years old with priority to be given to underserved groups, including teen and single parents, low-income parents, two-worker families, etc. Each center provides parent education, training, and support services, information and coordination services, technical assistance and consultation, and training services for other community agencies. Some local sponsors include community service agencies, mental health services, Catholic charities, a town, and a YMCA.

In Maryland, the Department of Human Resources and two private foundations founded an organization called Friends of the Family to operate eight centers. Community agencies also received funding for locally responsive programs. Services include training to enhance parenting skills, health care and family planning, diagnostic and assessment services, temporary child care, educational opportunities (including GED classes), and job preparation and skill development to prepare for employment. The Maryland program is now restricted to teenage parents with hopes of broadening the range of participants as the program grows.

All of these state efforts have created local advisory boards and are sufficiently flexible to permit modifications at the local level to meet community needs. Each of these undertakings began on a small scale with pilot programs and phased growth, and each has included some form of program evaluation and monitoring. Relationships with the local agencies are in the form of partnerships rather than hierarchical.

According to Weiss (1989), it is yet unclear how effectively the universal programs, like those in Minnesota and Missouri, reach and serve the high-risk children and families. She reports that program providers are finding that it often requires substantial outreach effort to find and attract these families, and that the programs sometimes lack the financial, programmatic, staff resources to serve and retain them.

> In Minnesota and Missouri, developers are realizing the need to adapt their programs to serve particular population groups, including, for example,

> illiterate parents, economically disadvantaged parents, and highly stressed and isolated families, who are sometimes reluctant to participate in such programs (Weiss, 1989, p. 45).

Both Minnesota and Missouri are beginning to make provisions for special outreach and program services in addition to their regular programming.

Weiss (1989) reports that at present there is not a great deal of information available about the cost of quality services for different groups and concludes that better budgetary data would be very useful to states currently considering the sponsorship of family support and education programs.

> Ideally, future evaluators will design studies that address questions about which program components are necessary and sufficient to produce desired results. At present, state policy makers have little basis on which to make judgments about the potential effectiveness of such a program and about how to minimize costs without substantially risking program effectiveness (Weiss, 1989, p. 44).

The Texas legislature established the Early Childhood Intervention program (ECI) in the 1980-1981 session. The ECI program distributes funds to local agencies providing services to handicapped infants, toddlers, and their families. State funds for this group of children were supplemented by federal funds in 1986, when Congress passed P.L. 99-457, which reauthorized the Education of the Handicapped Act and amended that law to include an early intervention discretionary program. The Texas ECI program is directed by a state council made up of representatives from several state agencies that work with children. In the current year, this program is supported by $10 million from the state and $5 million in federal funds. The ECI's director estimated that it would cost $166 million to expand the program to serve all children that are environmentally and biologically at risk. Ms. Elder said that ECI has funded one pilot project for environmentally at-risk children. The Center for Development, Education, and Nutrition (CEDEN) was started in Austin in 1979 by Dr. Emily Vargas Davis, who continues to direct the program. CEDEN provides services to low-income families with infants and young children; its goal is to strengthen and promote families. Services include child and family screening, weekly home visits, group meetings, a toy-lending library, special materials, and social work referral services. Forty percent of the parents in the program last year were teenagers. In the agency's last fiscal year, the over 249 children who participated in the program are a very small proportion of those who need such services.

State programs to provide services to children and families are in their infancy. Heather Weiss (1989) calls the four state programs described here the pioneers. Other states are showing a great deal of interest in early intervention programs. A recent report from an Alaskan special commission concluded that "support for parents to learn good parenting is the single greatest investment Alaska can make in strong families" and advocated the implementation of parental support and education programs (Governor's Interim Commission on Children and Youth in Alaska, 1988, p. 15).

In other states, policymakers are considering the cost effectiveness of supporting prevention programs for young children and their families rather than incurring the much greater cost of providing prisons and welfare payments to adults who lack the skills to function in society. In Texas, for example, Lieutenant Governor Bill Hobby's Anti-Crime Plan of 1989 justified support for many measures directed at young children and their parents with the following rationale:

> Certain common characteristics appear over and over in surveys and studies of felons: most grew up in poverty, in violent or dysfunctional families. Many were denied the medical care that more fortunate families can afford. Many were victims of physical or sexual abuse and have mental health, alcohol or substance abuse problems. More than 85 percent of Texas prison inmates are high school dropouts. Their average educational achievement level is the seventh grade (Hobby, 1989. p. 2).

Business leaders increasingly express support for early intervention programs. In 1987, the Committee for Economic Development issued a report urging businessmen to get involved in community efforts to improve education because without a well-educated workforce our industries will be unable to grow and compete. The CED report gave the highest priority to early and sustained intervention in the lives of disadvantaged children. It recommended prenatal and postnatal care for high-risk mothers, parenting education, family health care and nutritional guidance, quality child-care arrangements that stress social development and school readiness, and quality preschool programs for all disadvantaged three- and-four-year olds. The CED said that evidence suggests that small programs work best. "Massive programs wrapped in bureaucratic anonymity and red tape run the risk of depersonalizing a problem that involves basic human needs" (1987, p. 16)." The committee urged states to resist the temptation to supplant local authority to a substantial degree.

> State directed programs tend to create layers of bureaucracy, produce onerous and ill-defined regulations, and obscure the plight of individual students whose welfare is the ultimate objective of these programs. Local school districts and individual schools should be provided with enough discretionary power so that programs are kept small in scale, remain manageable and flexible, and are able to be individualized (1987, p. 18).

Support for early intervention programs comes from businessmen, educators, policymakers, and providers of family support services. Some states already sponsor programs for families with infants and young children. The final section of this paper recommends some intervention programs to help low-income families with children between birth and three.

CONCLUSIONS AND RECOMMENDATIONS

This paper has reviewed parent-child interventions for children between the ages of birth and three and has made recommendations to help minority children reach public school with the good health, attitude, and skills necessary to succeed. We are especially concerned about children from low-income families because they are not likely to do well in school. A large percentage of minority children live in poverty.

All parents of young children can benefit from parent education programs, and the success of programs in Minnesota and Missouri indicates the popularity of these programs at all income levels. Poor families need a comprehensive set of services including health care, screening for parents and children, nutrition education, education programs (GED), job training and counseling, and information and referral to community agencies providing services for which they may be eligible. Not all families need all of these services. Programs must allow for individualization.

Intervention programs between the ages of birth and three can influence children's IQ scores (e.g., Florida Parent Education Project, Mother-Child Home Program, Abecedarian Project) and school performance and behavior (e.g., Parent-Child Centers, BEEP, Yale Child Welfare Study). Programs for parents can change parental attitudes toward discipline and increase understanding of child-development principles (e.g., Parent Child Centers, Avancé). The strong grass-roots family support movement testifies to both the need for and popularity of services for families and young children. Evidence indicates that a program offering intensive and comprehensive services to parents can affect the likelihood that they will seek opportunities for education and become independent of government support (e.g., Yale Child Welfare Research Program).

Unfortunately, we have limited data, research and evaluation studies to indicate which type of program is best for whom, which actions achieve which outcomes, and at what cost. However, it is obvious that intensive, comprehensive programs are more costly than simpler programs designed to meet the needs of the general population.

It has been the experience of local family support activities and state-funded programs that the families most in need of services are the hardest to reach and to maintain in the program.

They seem to benefit more from individual support services and may be unable to participate in a group support program until the family has stabilized. These families move frequently, and the attrition rate in many programs is high.

Educators, policymakers, business leaders, and providers of family support programs are united in their desire to support intervention programs that will give infants and their families a better start. The question is, how best to do this? Existing family support programs are often short lived and strapped for funds. They do not have the resources to provide the research and evaluation necessary to assure that money is being spent wisely and programs are operating effectively and accomplishing their goals.

The answer seems to be to combine programs that are controlled locally by people who can build relationships with families and also have access to large agencies to provide technical assistance, resources for research and evaluation, and coordination among public and private groups. Such an institution exists in the form of the public school system. Edward Zigler (1987) has proposed what he calls "the school of the twenty-first century," and his conception of the school provides for local control with support from large state agencies. Zigler's plan would offer on-site care for children ages three to twelve throughout the year and for children from birth to three, outreach programs involving a family support system for first-time parents, support for family day-care homes within the neighborhood, and information and referral services. The programs for parents of young children pioneered by Minnesota and Missouri would fit easily into this model.

The advantages of this model for programs for children from birth to three is that it would provide a site for services to families in every community and could be modified to meet the needs of that community. It would bring the parent and school into a relationship long before the child begins kindergarten and establish the foundation for parent involvement later on. Families who received support services could be more easily followed since the child would continue to attend the school.

A disadvantage of offering family parent-child programs in the schools is that school personnel are not often trained in early childhood development, parent education, and social work. To provide intensive, comprehensive services to families needing support, an interdisciplinary team is necessary and might best be under the direction of someone trained in social work. Another problem with this model in providing parent-child programs for minority families is that unless the program is targeted at this population, the program may not reach them. Providers have found that the families most in need have to be sought out and encouraged to participate. Finally, funding will be difficult. Zigler proposes to have parents pay for child care in the school of the twenty-first century. Low-income parents, who need the most costly services, cannot pay for them. To protect the interests of low-income parents, the schools might provide for a program targeted at minority families and work to coordinate various funding sources—federal, state, corporation, foundation, private, and not-for-profit. This funding pattern is essentially the one used for Maryland's centers. However, a system of parent centers lacks those aspects of the school model that make it attractive, such as a location in every community, the easy tie-in with sources of support, and the early partnership between the parents and the schools.

Support for a program like Zigler's or the parent-child education programs in Minnesota and Missouri carries with it the danger of using the limited resources for programs that reach primarily the middle class. Heather Weiss (1989) found that in some Minnesota sites, the programs have large waiting lists of primarily middle-class families eager to get into the regular neighborhood program. She points out that it can be difficult for the school district to justify diverting resources from these programs to serve highly stressed families in need of more intensive and comprehensive services.

Although a fair start is of primary importance in assuring at least the opportunity to succeed later on, it is only one aspect of a very complex puzzle; and a good start in the first few years must be followed with continued support and encouragement. Edward Zigler reminds us not to expect too much of early education. He quotes Fred Hechinger, "Part of the problem is to over promise and under finance. The hard fact is; there are no educational miracles against the effects of poverty" (Hechinger, 1986, p. 148). One cannot propose better education for minorities without also supporting welfare reform, job training, housing assistance, child support, child care, nutrition, and health care.

Chapter 3. Neither Equitable nor Excellent: The Effects of Tracking on Minority Students

by

Frank Mecca*

INTRODUCTION

> It really don't have to be the tests, but after the tests, there shouldn't be no separation of the classes. Because, as I say again, I felt good when I was with my class, but when they went and separated us—that changed us. That changed our ideas, our thinking, the way we thought about each other and turned us to enemies toward each other—because they said I was dumb and they were smarter (Schafer and Olexa, 1971, p. 62).

This former delinquent from Washington, D.C., has, in his own words, given an eloquent critique of the practice of tracking in schools. The term *tracking* refers broadly to the separation of students into homogeneous instructional groups based on assumed similarity of ability or aptitude. It is a practice that, in one form or another, is pervasive in American public schools.

The most commonly cited rationale for tracking is that homogeneous ability groups ensure that better students are not "held back" by slower ones, and slower students get the remedial help they need. Thus, it is viewed as an efficient and effective classroom mechanism to accommodate the differences in student interests and abilities (Rosenbaum, 1980; Nevi, 1987).

However, despite its nearly ubiquitous nature, tracking has some very negative effects on most students, especially those identified as "average" and "slow." Since minorities are disproportionately represented in lower groups, tracking has its most pernicious effects on minority students. Placement in a lower track or a vocational track usually begins a cycle of restricted opportunities, diminished outcomes, and a growing achievement gap between high-and low-track students. Along with fostering negative self-images, tracking causes inequality of educational opportunity, as slower students are offered less stimulating classroom experiences and less access to information and training that is crucial for success in an increasingly high-technology economy. The ultimate results of this multi-tiered educational system for many minorities are lowered educational attainment, increased dropout and delinquency rates, and decreased economic opportunity.

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The focus of this paper is an evaluation of the practice of tracking and its effects on minority students. After defining the terms *tracking* and *ability grouping*, a history of the development of tracking will be presented. The paper then examines the state of current research on the assumptions implicit in tracking systems and analyzes the negative effects of tracking, most notably inequality of educational opportunities resulting in diminished educational attainment. Finally, the paper offers some alternatives to tracking.

Definitions

The term *tracking* has meant different things to different analysts and researchers. Indeed, evaluations of the effects of tracking are quite difficult since researchers often have not precisely defined what practices they have included under the rubric *tracking*. Different practices, though, have different effects on students, both in degree and in kind. Thus, consistent and accurate definition of terms is crucial for a complete understanding of the problem.

Various forms of tracking are all types of ability grouping, though, not all ability grouping is tracking. There are two general forms of ability grouping: within-class and between-class. *Within-class ability grouping* assigns students from a heterogeneous class into smaller, homogeneous instructional groups. Although this practice is not without its problems, it is not, in a strict sense, tracking. Researchers have found that this practice has positive effects on student achievement (Slavin, 1987c; Kulik and Kulik, 1987). However, the more time that is spent in homogeneous grouping, the more the practice resembles tracking, and the greater its potential for negative effects. This paper will not refer to within-class ability grouping in its criticism of tracking, although the efficacy of this practice will be addressed during the discussion of alternatives to tracking.

Between-class ability grouping is what is most accurately referred to as tracking. Between-class grouping can also take two forms. First, students are homogeneously grouped into different level classes of the same subject (i.e., advanced, honors, regular, and basic English). Second, students can be streamed into totally differentiated curricular programs, such as general, vocational, and college-prep. It is this streaming that is most commonly labelled tracking. Special education tracking is a form of this second type of between-class ability grouping, as students are homogeneously grouped for an entirely separate and differentiated curriculum. This chapter uses the term *tracking* to refer to both forms of between-class ability grouping, drawing distinctions between them when necessary.

Extent of Tracking

Tracking is a pervasive practice in American schools. Accurate measurements of the extent of tracking are difficult. In many schools tracking is a formal, standardized procedure. Other schools claim not to track, but researchers have found informal streaming of students into particular classes based on perceived ability. "[I]t is the rare school that has no mechanism for sorting students into groups that appear to be alike in ways that make teaching seem easier" (Oakes, 1985, p. 3). At the elementary level, tracking takes the form of homogeneous grouping of students into different level classes of the same subjects. It has been estimated that about half of all public elementary schools utilize this form of tracking. At the secondary level, both types of tracking are in practice; usually both types are used in the same schools. Most high schools have some variation of the "general, vocational, academic" curricular differentiation. All students have to take some academic subjects. These are usually homogeneously grouped into different levels, for instance, basic and advanced English. Estimates of the extent of tracking at the secondary level have not distinguished between the types of tracking, but evidence suggests that some form of tracking is ubiquitous. In a representative study of U.S. junior and senior high schools, over 90 percent of schools in the sample practiced some variant of tracking (Oakes, 1985). Overall, the consensus of the research suggests that tracking is practiced in at least a majority of elementary schools and almost all secondary schools.

HISTORICAL DEVELOPMENT OF TRACKING

Despite a growing body of evidence indicting tracking, the practice remains pervasive in American schools. Tracking has a long tradition and has become a "natural" way to organize classrooms and school systems. If one wishes to significantly change this most ingrained practice, it is important to understand the factors that led to its development.

Before 1890, a very small percentage of school-age children were enrolled in secondary schools. In 1890, only 6.7 percent of school-age children were enrolled (Schafer and Olexa, 1971, p. 3). After 1890, a population explosion coincided with mandatory schooling laws to cause a dramatic increase in the numbers of students in American schools. Over 15 million eastern and southern European immigrants flowed into the country, many of whom were poor, unskilled, and uneducated. The need to acculturate the children of these new minorities was the principle force behind the compulsory schooling movement. As a result, between 1880 and 1918, student enrollment increased over 700 percent, from about 200,000 to over 1.5 million (Oakes, 1985, p.19). Not only did the raw numbers of students increase, but the kinds of new students were quite different. Now the schools had to deal with children from poor households, with uneducated parents, and with widely differing interests and abilities.

This wave of immigration coincided with the Industrial Revolution. The American economy radically changed from an agrarian, trade-oriented one to an economy characterized by mass production and division of labor. A different type of worker was needed to fuel the Industrial Revolution—an unskilled or semi-skilled laborer who would work on the assembly lines and in the factories. Immigrants were perfectly suited for this role. However, most social critics believed that the immigrants lacked the values of discipline and asceticism that would make them efficient workers. Some mechanism was necessary to acculturate these immigrants.

Popular attitudes toward immigrants, often xenophobic, also contributed toward the pressure to differentiate curricula. Many Americans greatly feared the effect these "great unwashed" masses of immigrants would have on American society. The rapidly deteriorating condition of urban areas, predominantly populated by immigrants, lent credence to the belief that immigrants lived depraved lifestyles. Emerging theories of social Darwinism provided scientific legitimation for these prejudices and notions of Anglo superiority. Social Darwinism was the predominant belief that some races were genetically or socially more fit to succeed. Those people with the necessary biological or intellectual qualities would flourish, the rest would languish in poverty and deviance.The reason these immigrants were so morally and culturally depraved was because they were biologically inferior. Thus, their poverty was due to the fact they were genetically "less fit." The children of immigrant families posed a special problem for social planners. These children obviously inherited the traits that made their parents so culturally, socially, and economically inferior. Unless something was done with what G. Stanley Hall called "the growing army of incapables," (Hall, 1906, p. 510) the swelling numbers of immigrants would seriously threaten the dominant values of Anglo-American society. A member of the Boston School Committee summarized this fear in 1889:

> Many of these children come from homes of vice and crime. In their blood are generations of iniquity . . . They hate restraint or obedience to law. They know nothing of the feelings which are inherited by those who were born on our shores (cited in Lazarson, 1971, p. 33).

To solve the problems of acculturating immigrants and providing an efficient laborer for the mass production economy, society turned to the schools, as it would increasingly do in the future to address social problems. This movement toward compulsory schooling, however, posed a problem. Society could not look to traditional schools, which had hitherto mainly educated elites in subjects like Latin and Greek, preparing them for academic lives (or at least privileged ones).

The solution to this problem in most urban areas was the comprehensive high school- a new secondary school that promised something for everyone, but not the same something. Wealthier Anglo students would continue to take academic, college-prep programs of study.

Immigrants would take manual and vocational education. Manual education served the dual purpose of instilling in immigrants the dominant values of discipline and hard work, while at the same time providing skills that would relate to "obvious" future employment of immigrants. As the Boston superintendent of schools wrote, "The systematic introduction of manual training appears to be the only remedy for this enervated condition of our city population; the only universal stimulus to ambition and original effort on the part of our children" (quoted in Lazarson, 1971). With the creation of the comprehensive high school, the first tracking schemes were introduced.

Frederick Taylor's influential advocacy of "scientific management" provided additional justification for tracking. Taylor believed that a workplace was most efficiently organized by strict division of labor, with each employee doing only one task repeatedly, thereby becoming an "expert" in that task. Since this was viewed as the proper workplace structure, it made sense to provide future workers with vocational and manual skills, rather than the higher-order, traditional academic knowledge that, according to "Taylorism," they certainly would not need.

By 1918, the comprehensive school was clearly emerging as the dominant school structure. In the same year, a special committee of the National Education Association (NEA) published the widely read *Cardinal Principles of Secondary Education* (NEA, 1918). It recommended differentiated courses of study into various academic and vocational programs. The report recommended that partial differentiation take place in junior high schools, as students begin to explore vocational interests. Full-blown tracking should occur in the high schools. With the endorsement and guidance of the NEA, comprehensive high schools became firmly entrenched as the dominant secondary school type in America (Oakes, 1985).

During the early years of the comprehensive high school, track placements were made on the blatantly class-biased basis of ethnicity, race, and economic background. The invention of IQ tests provided a scientifically "fair" placement mechanism which legitimated tracking schemes. IQ tests permitted the first "ability grouping." IQ test pioneer Lewis Termon wrote in 1916:

> At every step in the child's progress the school should take account of his vocational abilities. Preliminary investigations indicate that an IQ below 70 rarely permits anything better than unskilled labor; that the range between 70 to 80 is pre-eminently that of semi-skilled labor, from 80 to 100 that of skilled or ordinary clerical labor, from 100-110 or 115 that of semi-professional pursuits; and above all these are the grades of intelligence which permit one to enter the professions or the larger fields of business (Termon, 1923, pp. 27-28).

The fact that large numbers of immigrants were determined to be suitable for the lowest economic rungs of society did not call into question the validity of the tests, since immigrants were generally believed to be genetically inferior. Referring to Catholic and Jewish, eastern and southern European immigrants, Termon said, "Their dullness seems to be racial . . . Children of this group should be segregated in special classes. They cannot master abstractions, but they can be made efficient workers" (Termon, 1923, p.28).

The 1930s saw a large migration of Blacks from the rural South to the urban centers of the North. As this migration took place, tracking began to be used as a vehicle of acculturation for racial minorities. However, many racial immigrants were placed in "separate but equal" [sic] schools in both the North and the South. Little has been written on the use of tracking within these schools, but their existence alone indicates a form of societal tracking. After the Supreme Court's landmark *Brown v. Board* decision, schools began to desegregate, however slowly. Schools desegregated, but classrooms did not, as large numbers of racial minorities found themselves in the lowest sections and in the vocational and manual curricular streams.

Tracking within and across grades became so widespread, that it began to be viewed as the natural way to organize schooling. The launching of Sputnik gave ability-grouping another boost. The reaction to the launch was to strengthen the education of the most gifted students, and curriculum differentiation was a logical way to address this problem.

Since the turn of the century, ideas about biological inferiority and intellectual predetermination have changed dramatically, though they have not disappeared. However, tracking mechanisms remain. The practice is so much a part of our educational tradition that it is very much taken for granted as an efficient classroom organizational tool. It is still generally assumed that tracking works to the benefit of students of all ability levels and to the benefit of teachers. In fact, there are many assumptions which are implicit in the practice of tracking that are rarely systematically evaluated. It is to this task that we now turn.

TRACKING: ASSUMPTIONS AND EVIDENCE

The first premise of tracking is that students learn better when they are placed with students of similar ability levels, with those who know the same things or learn at the same rate. Brighter students are not held back by teaching to the "least common denominator," and slower students are not intimidated or frustrated by being juxtaposed with their "smarter" classmates. Moreover, ability grouping facilitates remediation of slower students.

A second assumption, implicit in the first, is that human potential is somehow fixed or circumscribed by background. If it is true that not all students can learn fundamentally similar material, then schools need to differentiate their curricula to accommodate these variations in potential or ability. This view is sometimes referred to as the "deficit model" of child development. Charles Nevi is a strong supporter of the deficit model theory. He believes:

> Some students, for whatever reasons, are just plain smarter than others. Other students come to school with a broader and deeper range of experiences, with attitudes that foster learning, and with a positive orientation to school, rather than a neutral or negative one. The schools did not create these differences, but the schools must accommodate them, and one way is through grouping students according to their needs and abilities (Nevi, 1987, p. 25).

Third, it is assumed that slower students develop positive self-images when they are not placed with more capable students. It is widely believed that slower students develop negative self-images when they are continually competing with brighter students for rewards.

A fourth assumption is that placement mechanisms accurately and fairly separate students based on past academic performance, innate ability, and future learning potential. Key to this assumption is that past performance is an appropriate indicator of future abilities within classes and across entire courses of study.

Finally, it is commonly assumed that it is easier for teachers to instruct homogeneous groups of students. Teachers can better individualize instruction and manage classrooms if the students in the group are at roughly the same ability level. "[I]t is commonly believed that the differences among students can not be accommodated" within a common schooling situation (Oakes, 1987, p. 8). The widespread nature of tracking practices strongly supports the idea that these assumptions are deeply entrenched in educators' minds.

In regard to evidence on the effects of tracking, there is a wide body of literature on tracking with often conflicting findings. This section highlights the most important studies and presents as best as possible the consensus of the evidence thus far.

Evidence seems to contradict the primary assumption that children learn better in homogeneous groups. Although some evidence indicates that slower students are not harmed by their placement in lower tracks, the preponderance of the evidence finds no positive effect of tracking on educational attainment. Robert Slavin performed a meta-analysis of numerous studies of the effect of tracking an achievement at various levels in the educational continuum. Meta-analysis is a technique that allows for the synthesis of multiple studies in order to arrive at the consensus of the studies. Individual studies are selected on the basis of some relevant criteria, the findings of individual studies are coded, and the results provided by meta-analysis indicate the consensus of the individual studies analyzed. He found that there are no positive effects of tracking on achievement (Slavin, 1987a). Many other researchers have come to the same conclusion (Kulik and Kulik, 1987; Oakes, 1985).

Most studies have found that educational attainment of those identified as slow or average is negatively affected by tracking (Esposito, 1973). This will be discussed in detail in the following section. The data on "better" students strongly suggests that while a few are positively affected by placement in homogeneous groups, the vast majority are not (Slavin, 1987a; Esposito, 1973). However, some data suggest that "brighter" students are systematically positively helped by placement in gifted classes (Kulik and Kulik, 1987; Slavin, 1987c). It appears brighter students will learn well no matter what setting they are placed in, though they may learn more in gifted classes. In sum, it appears that very few students are actually "helped" by homogeneous grouping and some are actually harmed. Jeannie Oakes summarized the consensus of the evidence on this first assumption:

> [W]e have virtually mountains of research evidence indicating that homogeneous grouping doesn't consistently help **anyone** learn better. Over the past 60 years hundreds of studies have been conducted . . . [that] vary in their size and in their methodology . . . The results differ in certain specifics, but one conclusion emerges clearly: **no group of students has been found to benefit consistently from being in a homogeneous group** (Oakes, 1985, p. 7, emphasis added).

The assumption that some students can not learn as much as others has been refuted by a large body of evidence from the "effective schools" research. The overwhelming conclusion is that all students can learn. Some may be better prepared when they enter the educational process, but with proper instruction and appropriate stimuli, all students can master the vast majority of material that some would say is accessible to only the "talented" elite. Further, mastery learning literature also supports the claim that all students can master very similar bodies of information.

The third assumption—that slower students develop positive self-images in tracked classes—also seems to be contradicted by research data. Several studies have concluded that after controlling for demographic variables, tracking actually fosters lower self-esteem among students, especially teenagers (Esposito, 1973; Rosenbaum, 1980; Abadzi, 1985; Oakes, 1985). Further, some research has found that students in lower tracks were more likely to become frustrated and have lower aspirations than those in higher tracks, even after controlling for pre-track attitudes and demographic traits (Alexander et al., 1974; Rosenbaum, 1980). Thus tracking itself contributes to lower self-esteem and frustrated aspirations.

Intuitively, the reason for this finding is not difficult to understand. In tracked systems, children are identified in a rather public way as to their intellectual and academic capabilities.

Labelling theorists believe that there is a self-fulfilling prophesy at work when tracking is performed. Many have theorized that students internalize these labels of their academic ability, as the labels become a measure of self-worth. Labels become tangible badges of ability or self-worth to the individual and to educators. Some "cultural reproduction" theorists believe that labelling is one way that schools reproduce the inequality found in society. Labels caused by tracking "legitimate inequality" that is in the greater society that is manifested in the unequal preparation with which some youngsters enter school (Bowles and Gintis, 1976). In other words, tell a student that he or she is a slow learner, and he or she will believe that he or she is a slow learner, and, indeed, he or she will learn slowly (Rosenthal and Jacobson, 1968, pp. 174-82).

There is also a definite hierarchy of values in tracked systems. Clearly, the college-prep track is valued more highly than the vocational one, and honors English is more highly valued than basic composition. As the introductory quote from the young man from D.C. reveals, students are highly cognizant of their places in the tracked systems and the value that is implicitly conferred to their placement status.

In order to evaluate the assumption that placement mechanisms are fair and accurate, it is necessary to examine the most common placement techniques: standardized tests, recommendations from counselors and teachers, and parent and student choices.

In a large 1970 survey of U.S. school districts, Findley and Bryan (1975) found that 83 percent of the districts surveyed used achievement and/or IQ tests as a basis for tracking students. A comprehensive review of the efficacy of IQ tests is beyond the scope of this paper. However, there is certainly no consensus as to what these tests actually measure, and there is a large body of evidence that suggests these tests are culturally biased. Regardless of the actual "fairness" or "accuracy" of these tests, their results are clear and disturbing—poor and minority students consistently score lower than better-off Whites. Since the poor and minorities as a group do not have less aptitude, other factors, such income and parents' education, must be important determinants of test scores.

There has been little systematic research on the effects of counselor and teacher recommendations on track placement. One would expect, however, that subtle and unconscious biases would play a part in these decisions, with the effect of overrepresenting poor and minorities in lower tracks. In a 1963 study of one Midwestern high school, counselors made placements on the basis of "social characteristics" like language, dress, and behavior, as well as on the basis of measured aptitude (Cicoural and Kitsuse, 1963).

Theoretically, parental and student choices can overrule a placement decision if they feel it is unfair. In reality, this rarely happens for poor and minority students. The parents of these students, themselves often with limited educations, feel intimated and unable to challenge decisions made by the authorities in the schools.

The net result of these placement mechanisms is a most pernicious effect on poor and minority students. Study after study has found that minorities and those with low SES are disproportionately placed in lower tracks, even when researchers control for past achievement (Schafer and Olexa, 1971; Persall, 1977; Finley, 1984; Oakes, 1985; Vanfossen et. al., 1985; Lee and Bryk, 1988). One might argue that due to disadvantaged upbringings, the poor and minorities are the least able students, so tracking is "fair." Even if this were true (which it is not), we have seen that tracking does not help slower students, so there is no justification for tracking.

Further, it is far from clear whether placement tools appropriately measure academic potential. Evidence presented in the case of *Hobson v. Hansen* (269 F. Supp. 401 (1967), p.490) showed that, upon reevaluation by school psychologists, two-thirds of the students who were assigned to the lowest tracks in District of Columbia schools were inaccurately evaluated. Many were capable of work in the highest track. Further, Elder (1983) found that half the students in his first-grade sample would have had different initial group placements had reading readiness been the only criterion. The evidence strongly suggests that placement schemes are both inaccurate *and* unfair.

The final assumption—that teaching is easier in homogeneously grouped classes—is not so easily dismissed. Many teachers have reported this to be their belief. The fact that tracking is so pervasive is testament to the fact that teachers and administrators support its use. However, given the negative effects tracking has on many students, the ease it brings to teachers is not worth the price that we pay for it.

CONSEQUENCES OF TRACKING

In the previous section we critically analyzed the assumptions which underlay the practice of tracking. Several negative effects of tracking were highlighted. It is now necessary to more comprehensively examine the major negative consequences of tracking: inequality of educational opportunity and inequality of educational outcomes. It should be remembered that since minorities are found disproportionately in low groups, they are affected by tracking as a group in a more systematic way.

Inequality of Educational Opportunity

One of the principal justifications for tracking is that it allows for the remediation of slower learners so they can "get up to speed." However, the preponderance of literature strongly suggests that tracking brings no one up to speed. Rather, those in the lowest tracks are offered less important material with low quality instruction. This inequality of educational opportunities effectively prevents academic mobility.

Most of the studies on the opportunity-limiting effects of tracking focus on the secondary level. This is due to the fact that both types of tracking are in place in high schools, and there is a much greater degree of explicit curricular differentiation. However, research does indicate that the cycle of restricted opportunities begins at the early elementary levels. In a review of ethnographic data on first- and second-grade reading ability groups, Grant and Rothenberg (1986) discovered that students in the lowest tracks spent less time-on-task, and received *less* attention than students in the more advanced reading groups. Consistent with labelling and self-fulfilling prophesy theory, the authors pointed out that the reading group assignments became a symbol of general academic and social competence, with the reading labels carrying over into other academic areas. The authors concluded:

> . . . groups of different levels provide different social and learning environments for their members. The experiences that children have in groups influence their acquisition of academic and social skills needed for future success in school. Thus, for most children in public schools, assignment to an elementary reading group is a critical first step in a sorting process that channels some toward success, some toward moderate levels of achievement, and some toward failure (Grant and Rothenberg, 1986, p. 29).

At the secondary level, the inequality of academic opportunities becomes more pronounced and more problematic. Wide variations exist between upper and lower tracks both in the content of the classes and in the quality of instruction. Oakes (1985) comprehensively analyzed a large sample of tracked high school English and math classes. With respect to content, Oakes found a much greater exposure among upper-track students to "high status" information and material. By high status, she means information that society has deemed important for future academic success and for the most prestigious occupations. For example, sophomores in advanced math were learning conceptual geometry, while students in basic math were learning consumer mathematics. Additionally, senior English students in advanced English were receiving preparation for SAT vocabulary, while those in basic English received no such training. In a case study of a large suburban high school, Finley (1984) similarly found great variances in exposure to more socially important subject matter. As was the case with elementary school tracking, students in high schools are receiving systematically different experiences which profoundly affect ultimate educational attainment (Vanfossen et al., 1985).

The quality of instruction in tracked systems is also unequally distributed. Several researchers have found that the least experienced and least capable teachers teach the lowest groups—the groups that ostensibly require the most effective instructors (Schafer and Olexa, 1971; Finley, 1984). Other studies have found that teachers in lower classes tend to emphasize rote memorization and passive learning, versus upper-level tracks where the tendency is to encourage higher-order thinking, independent initiative, and active participation (Oakes, 1985; Trumble and Sinclair, 1987). Lower-level classes also have been found to spend less time-on-task, are assigned less homework, and proceed at a much slower pace than higher-level classes (Rowan and Miracle, 1983; Oakes, 1985; Trumble and Sinclair, 1987).

Ironically, these disparities actually inhibit future academic mobility rather than accentuate it as proponents of tracking believe. Once a student is locked into a track, his or her learning experiences and exposure to necessary information and ideas severely restrict the future opportunities that he or she can pursue. Because many in the lower tracks are not exposed to much necessary learning ("high status material"), they can not move up, even if they expressed the potential and willingness to work. For instance, if a student has not taken algebra by grade ten, he or she will not have time to take the prerequisite math courses for entrance into most colleges and still graduate on time. Oakes summarizes this dilemma:

> So, by the omission of certain content from low-track classes, students in effect were denied the opportunity to learn material essential for mobility among track levels. This content differentiation was found as early as grade six (Oakes, 1985, p. 78).

Numerous other studies have corroborated the almost nonexistent mobility in tracked systems. Elder (1983) found that elementary placements become stabilized with few exceptions, and Schafer and Olexa (1971) found that only 7 percent of students in their sample moved upward in track level. It appears, then, that tracked systems often become virtual caste systems, seriously circumscribing the educational opportunities of vast numbers of students.

The disparity in educational opportunity is particularly alarming today, given the increasingly high-technology economy that is developing. The dominance of the heavy manufacturing sector of the economy is a thing of the past. Numerous analysts have predicted that all workers in the future will need high-quality educations. The most important qualities a worker will need are analytic, problem-solving skills and solid communication skills (verbal and oral). The evidence presented thus far suggests that such an education, providing high status information while developing higher-order thinking skills, is currently reserved for students in the upper tracks. The economic system that contributed to the development of tracking is an obsolete one, but tracking mechanisms continue. In the end, economic and employment opportunities for many students are limited by tracking.

Diminished Educational Outcomes

As the evidence previously presented reveals, no data prove that tracking systematically helps any group, while other data indicate that tracking fosters lower aspirations and self-esteem. Given the sub-par education received by many low-track students compounding these lower aspirations, one can not help but come to the conclusion that tracking diminishes the educational attainment of many students. Surprisingly, though, there have been very few rigorous, controlled studies correlating tracking with educational outcomes. This is most likely due to the controversy surrounding how to measure educational achievement.

Though conducted in 1971, Schafer and Olexa's study is still widely quoted and is one of the best investigations of the effects of tracking. They found that, after controlling for their father's education, IQ, and previous GPA, lower-track students attained significantly lower GPAs, lower rates of academic improvement, and higher rates of dropping out and delinquency than their higher-track counterparts (Schafer and Olexa, 1971). More recently, Gamoran (1985) also found significant differences in student achievement due to tracking.

CONCLUSIONS AND RECOMMENDATIONS: ALTERNATIVES TO TRACKING

Between-grade ability grouping, or tracking, is ubiquitous in American schools. The practice developed as a response to unprecedented waves of immigration and the concomitant social strains associated with it, as well as the need to supply workers to fuel the Industrial Revolution. Tracking has such a long tradition, that it is now widely viewed as a natural and logical method of organizing classrooms and schoolrooms.

When the assumptions implicit in tracking schemes are tested by evidence, however, it appears that there is little justification for the practice. Data suggest that placement mechanisms are inaccurate and unfair, grossly overrepresenting the poor and minorities in lower tracks. The overwhelming consensus of the literature suggests that no groups are systematically helped by tracking and that tracking causes lowered self-esteem and aspirations for many students. The most damning indictment of the practice is its production of an unequal distribution of educational opportunities. The limited opportunities available to lower track members severely hamper their ability to move up in the track and doom many to a diminished level of educational attainment. Tracking thus becomes a caste system, whereby those in the lowest groups are destined to remain there. Given the skills necessary to succeed in the economy of the 21st century, low-track students will also have very limited economic opportunities in the future.

It is one thing to critique the practice of tracking; it is an altogether different one to offer alternatives. It is irrefutable that different students enter school with disparate levels of preparation. It is also a fact that different students have different learning styles and learning speeds. Therefore, some grouping must take place for effective instruction. I am no educational expert and do not pretend to have the definitive answer to the question, "If not tracking, then what?" What follows is a package of reform proposals. I feel confident recommending abolishing certain practices and adopting some others. However, within the complex area of classroom organization and instructional innovations, a list of the most promising reform possibilities is presented as an advisory menu of potential alternatives to tracking.

Elementary Level. Tracking (between-class ability grouping) at the elementary level should be prohibited. Classes should be heterogeneously grouped, reflecting racial, socioeconomic, and gender differences in the school. Evidence suggests that within-class ability grouping is an acceptable practice so long as (1) only a small part of the day is spent in homogeneous groups (i.e., reading and mathematics), (2) the specific grouping is based on measured achievement *in that subject area,* not on general intelligence tests or aptitude tests, and (3) placements are flexible and frequently reviewed. Within-class ability grouping has several advantages over tracking. First, the primary class assignment and the majority of class time is spent in heterogeneous groups, so the stigma of a low-track label is reduced. Second, the placement mechanisms are more related to the specific subject, rather than some general notion of intelligence.

There are some disadvantages to within-class ability grouping. The first is the need to manage multiple groups. With several groups in a single class, all but one group must work independently while the teacher works with the other group. Further, there is still the possibility that labels received from the homogeneously grouped subjects will be internalized and will lower aspirations and self-esteem.

Secondary Level. Due to the wider range of subject matter and student interests, eliminating tracking at the secondary level is more difficult. Some students certainly benefit from vocational education, apprenticeship programs, and other non-college-bound programs. The goal of reform should be to allow for this curricular diversity without closing options should a student change his or her mind.

Tracking usually begins at the junior high level as students are asked to identify their career and academic aims. This practice should be stopped. In junior high and the first two years of high school, there should be a common curriculum, comprised mostly of "high status" knowledge, or knowledge essential for acceptance to college that is currently reserved for those in the upper tracks. These classes should be heterogeneously grouped. A prerequisite to this reform is abolishing any labels like "academic," "general," and "vocational." Every secondary school experience should be primarily an academic one. It is true that some students will show a greater interest in these subjects and some will undoubtedly grasp the concepts and skills more quickly than others, but, at least these differences will not be predetermined by the structure of the school. The closing off of student possibilities will be considerably postponed as all students are exposed to the concepts and skills that permit access to higher education. Thus, opportunities remain open, as does academic mobility. At the very least, the schools would be removed from the business of *deciding* who is destined for college and who is not.

Moreover, those not bound for college immediately after high school would benefit from a strengthened common curriculum—one that has hitherto been reserved for upper-track students. For future economic success, a person will need strong grounding in basic skills and a capacity for higher-order thinking and problem-solving. Regrettably, those skills have been sorely lacking in curriculum for lower-track students. These abilities are much more likely to be developed in a common curriculum composed of "high status" information. The changing economy is quickly rendering irrelevant the distinction between an academic curriculum and a vocational curriculum. Further, if one wishes to attend college later in life, she or he will have the knowledge and preparation to do so because the college option has been kept open.

If schools are going to offer programs for the non-college-bound, they should be as electives, not as the focus of a general or vocational track. Further, they should not be offered until the junior year. In this way, a solid core of classes will be taken by all students, providing at least the opportunity for access to higher education. This new structure of high schools—everyone in an academic track, a common core curriculum, and limited curricular differentiation only after the sophomore year—will significantly lessen the "sorting" function that schools undertake at present. It also has the advantage of providing students with a large range of options, rather than circumscribing opportunities from the start.

Heterogeneous Grouping Teaching Strategies. The success of the above reform alternative depends, in large part, on effective innovations in teaching heterogeneous classes. During the past two decades, educators have been experimenting with new classroom organization strategies devoid of the drawbacks of tracking.

Albert Shanker, president of the American Federation of Teachers, points out a logical starting place—the lecture. The lecture style of teaching, aside from being a tool for passive rather than active learning, almost demands tracking. Obviously, a lecture can be given at only one level. A teacher either arbitrarily decides at which level to lecture (high, medium, or low) or delivers the lecture to a class that is at a similar ability level. Shanker believes that teachers must utilize nonlecture instructional media, such as computers, video tapes, and field trips. As more educators develop and utilize alternative instructional tools, certain modules of instruction can be packaged and shared throughout the country. Shanker even envisions a national teacher data base for tracking the progress of alternative classroom strategies (Shanker, 1989). Not until the lecture style loses its hold on American teachers can the following alternative classroom organizational strategies succeed.

The most promising alternative is cooperative learning. Under cooperative learning models, classes are heterogeneously grouped. Smaller heterogeneously grouped instructional teams (4-6 students) are then formed. The key characteristics of cooperative learning is extensive group interaction during learning, working toward a group goal. The success of one student helps other students achieve. There are various types of cooperative learning strategies with significant effects on the ultimate achievement of students.

Robert Slavin (1987b), conducting research with Johns Hopkins University, has devised several effective cooperative learning models. He includes these models under the category "Student Team Learning." Though they vary in the subjects and age groups for which they are applicable, all Slavin models share two important characteristics: group goals and individual accountability. To illustrate, students in a grade-school English class are learning possessive formations. The teams all get a group worksheet to complete. When they are done, the students know that there will be a quiz which each student must take individually, with no help from the group. The group also knows that the group grade, the most important evaluation tool, is based on the individual scores of all the students on that team. Thus, a strong incentive exists for teams to cooperatively ensure that every member of the group masters the material. Individual accountability and group goals distinguish this model from other cooperative models where the group gets a grade on one group worksheet, whereby the brightest students can dominate and fulfill the requirements without ensuring that everyone learns the material.

Research on the effectiveness of cooperative learning is encouraging. In a review of numerous studies on cooperative education models that include group goals and individual accountability, Slavin (1987b) reports that 34 out of 41 studies (83 percent) found significant positive achievement effects of the cooperative learning strategies. Interestingly, cooperative learning seems to have particularly strong effects for Black and Hispanic students (Slavin, 1985; Slavin and Oickle, 1981). Moreover, studies have found quite consistently that cooperative learning students express greater liking for their classmates as a result of the cooperative nature of the class (Slavin, 1985).

Another alternative to tracking is grade clustering. Grade clustering models group students according to their ability levels in a certain subject, regardless of their grade levels. High achieving youngsters are placed with their slower learning, older counterparts. A significant advantage of grade clustering is that the racial and ethnic composition is likely to be reflective of the school as a whole. Further, self-esteem problems are likely to be minimized, as the lower achievers possess the ego-advantage of age. Also, the highest learners will not become bored due to being locked into a class where they have already mastered the material. A variant of grade clustering, the Joplin Plan, has been used extensively for elementary reading instruction. Rothrock (1961) compared fourth and fifth graders in Joplin Plan classes versus those in within-class ability grouped plans. He found that Joplin classes gained an average 31 percent of a grade equivalent more than traditional classes on a standardized test of reading comprehension and 57 percent of a grade equivalent on work-study skills.

There are several obstacles to successfully eliminating tracking. The first is possible resistance from teachers in abandoning the lecture and adopting nontraditional instructional media. Certainly, accommodating a heterogeneous group of students is more difficult and requires more preparation than does accommodating a homogeneous group. In this way, eliminating tracking is inextricably linked with increasing teacher professionalism and general educational reform. The second obstacle, pointed out by Shanker, is potential resistance from parents who may balk at nontraditional classroom strategies, wanting to see their children get the same educations that they received.

A comprehensive review of alternatives to tracking is beyond the scope of this paper. However, the preceding analysis strongly indicates that we do not need to track, that promising alternatives exist, and that even more promising ones surely will be developed in the future. Given the most pernicious effects that tracking has on large numbers of students, it behooves educators and policy analysts to refine and continually evaluate alternative classroom organization models. To avoid this most serious task is to confer to vast numbers of youngsters, predominantly poor and minorities, inferior educations. These inequitable and inferior educations will ultimately result in economic failure for many victims of tracking.

Chapter 4. Everyone Can Learn Math

by

Robert M. Nielsen*

The condition of mathematics education is a national disgrace poised to become an irretrievable disaster. An antiquated curriculum, poorly taught and largely unlearned—a relic of the mechanical, industrial past—must be replaced by a modern curriculum adapted to the needs of citizens and employees living in a global information economy. Thinking about and doing mathematics must replace memorizing and rote application of algorithms. Students must learn to pose and solve mathematical problems, not simply to calculate using paper and a pencil. To function successfully in today's world, higher levels of mathematical literacy are necessary for everyone.

A variety of experimental programs aimed at improving participation and performance in school mathematics are presently underway. A new curriculum is evolving, and new curriculum and evaluation standards have been promulgated. In large part, curricular changes are developing from actual school experience with mathematics reform efforts. With some important overlap in the areas of methodology and classroom sociology, the reform programs divide into two categories: those that are designed to move more students through the old curriculum and those that attempt to implant the new curriculum. Both are valuable. Both are necessary.

A breakthrough in the teaching and learning of elementary arithmetic makes possible the introduction and mastery of concepts and content in the first three grades formerly reserved to grades four through six. Key features in the new curriculum include the introduction of intuitive algebra and geometry in preschool and early elementary grades; classrooms structured as workshops and laboratories where students, working both individually and collaboratively, solve problems arising from applications; calculators and computers available to all teachers and students; and the absence of tracking and ability grouping. Many pieces of this new curriculum are current practice. However, no school district has brought together all of the pieces into a coherent, comprehensive, restructured mathematics curriculum for pre-K through 12th grade.

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Assessment and technology emerge as the two areas in which more research and development are needed. Traditional modes of testing drive the curriculum toward 19th- century content and methods; most available computer software does the same.

We must make accessible *all* of the best mathematics education in *all* schools to *all* students to survive the new global economy. Changing demographics in school enrollments and in the workforce argue strongly for immediate targeting of mathematics reform efforts in large urban school districts to maximize the effect on minorities. In 23 of the 25 largest U.S. cities, minorities constitute a majority of public-school students.

Mathematics reform cannot be left to happen by itself. It must be organized. *Laissez-faire* reform is too uncertain for the exigencies; reform by legislative fiat or executive order will not work; and reform on the cheap is not possible. Teachers and their organizations working cooperatively with community and business leaders and school officials can make it happen.

FAILURE, DECLINE, AND DECAY

> Today's 13-year-olds will be the voters of 1993 and the country's employees of 1995. Their ability to understand mathematical concepts and solve problems will determine their individual success and the collective prosperity of the nation (Educational Testing Service, 1988, p. 79).

Recent reports on the condition of mathematics education in American schools leave little question as to the seriousness of the problem. By almost any measure, American students rate near the bottom in comparison to other industrialized nations. U.S. students ranked twelfth in a study of mathematical achievement in 15 countries—somewhere between Scotland and Thailand. The average Japanese high-school student knows more math than American gifted and talented students on average (McKnight et al., 1987). While 98 percent of current secondary students in the Soviet Union complete a compulsory mathematics sequence which includes introductory calculus topics taught in grades nine and ten, fewer than half of American students take as much as a year of plane geometry, and most of them never learn it (Wirszup, 1984, p. 6). The gap between American mathematical achievement and that of other countries is even wider on tests for conceptual understanding and complex and multistep problem-solving ability. Forty percent of the Koreans and from 16 to 24 percent of students in six other populations, but only 9 percent of American students, were able to solve these types of problems (Educational Testing Service, 1988, p. 19).

The number of mathematically trained Americans has decreased dramatically at every level of schooling over the past 15 years. Fewer than 800 Ph.D.'s in mathematics are awarded each year by American universities, and less than half of these are awarded to U.S. citizens—down from a high of over 1,400 in the early 1970s. Bachelor's degrees in mathematics have declined from a high of nearly 30,000 per year in 1973 to fewer than 14,000 per year. A large majority of elementary school teachers have taken no college-level mathematics or science courses. Recently, American colleges have reported a 10 to 30 percent rise in the need for remedial courses in mathematics for incoming freshmen (NAEP, 1988a, p. 9).

Most disturbing, even though the test scores of American students on basic math skills have improved recently, only about half of the 17-year-olds in the United States can identify whether 87 percent of 10 is greater or less than 10 (NAEP, 1988a, p. 40-41). That it is possible to improve test scores with no improvement in conceptual understanding points toward the most critical issue in the education-reform movement. Simply demanding more of the educational system as it is currently designed is an ill-conceived and dangerous reform strategy which only guarantees it will make a bad system worse.

Collectively, the authors of the reports from which this vision of decline and decay is drawn found their results "sobering" and of "grave concern" for the future of our nation. Yet, as bad as the situation is in mathematics education, it is worse in all other areas of science.

At a time when the necessity of mastering mathematics for life in an ever more technologically complex society has become increasingly evident, fewer American students receive any mathematics beyond arithmetic. Moreover, the exigencies of an information-based, global economic competition have escalated the consequences of this underachievement and miseducation in mathematics to a crisis of national survival. Education reform without science-education reform is not possible. Since mathematics is the gateway to the sciences, poor achievement in mathematics means poor achievement in science and technology. In the post-industrial world, poor achievement in science and technology implies reduced standards of living and a dangerously weakened national defense.

THE PROBLEM IN MATHEMATICS EDUCATION

> The student will learn to work the problems, but still will not understand (John Saxon, 1988).

Reform in mathematics education is central to the whole education reform movement. Thus, we must be careful to analyze the problem correctly and to propose valid remedies. The analysis must take into account recent research findings which demonstrate the difference between having the skills to make routine paper-and-pencil calculations and the ability to think critically and creatively. The core issues in the controversy over the validity of basic skills testing are perhaps the most instructive in the whole literature of the education-reform movement. They have particularly sharp definition within mathematics education. Originally intended to record learning trends, mandated standardized testing of student achievement is now widely used to spur curricular change, in spite of the fact that "the kinds of changes reported directly contravene the recommendations" of reform-minded elements within the mathematics community. The evidence is strong that students learn what will be on the tests. Indeed, the tests themselves often become "the best possible teaching aids" (Romberg, Zarinna, and Williams, March 1989). Through its testing practices, America has a *de facto* national mathematics curriculum—albeit a minimal competency curriculum. Unfortunately, most current testing has the unintended consequence of moving the curriculum in the direction of the 19th rather than the 21st century. It fragments, narrows, and trivializes the learning experience and furthers the teacher-dominated classroom. Improved test scores and lowered conceptual and problem-solving skills are the inevitable results of a misinformed testing policy. This result underscores the very real possibilities of reforming in the wrong direction. A good deal of reform produces negative results, and there is an on-going promotional advocacy for several genuinely wrong-headed ideas in the journalistic fringes of the education reform movement (Raspberry, 1989a, p. A-23; Raspberry, 1989b, p. A-19; and Raspberry, 1989c, p. A-19), and in the nether reaches of the textbook/software marketing circles (Saxon, 1988).

The influential syndicated columnist William Raspberry, for example, gives American school children, teachers, and administrators the dangerous advice that more mathematics really will not be required for our emerging technology-intensive global economy. Raspberry and others draw this dubious conclusion from their own past to infer the future—always a questionable practice (Raspberry, 1989a , p. A-23; Raspberry, 1989c, p. A-19)). Mathematics is important as much for the habits of thought it creates as for its instrumental value. Students who have not taken algebra by the time they complete middle school have greatly narrowed their career options. Too many minority students have done this already. It is very misguided for anyone to encourage others to similarly limit their options.

At the strategic level, it is crucial to recognize that the problem in mathematics is a combination of design flaw and quality-control failure. The present mathematics curriculum (content, instructional methods, and learning environment) is not designed to serve the needs of a global information society, nor is it producing the mathematically educated elite for which it was originally intended (NCTM, 1989, pp. 2-4). To fix the system as it currently exists is simply not enough. To only provide students with the best mathematics education possible within the limitations of the present mathematics curriculum and the schools as currently structured is to miss the mark badly. Indeed, to fail on a scale so monumental will make today's inadequacies pale in comparison. At the policy level, failure to understand this dual character of the mathematics education problem has already led to additional legislation and regulation mandating curricular requirements, hours of instruction, achievement standards, and the like—i.e., initiatives designed to correct a quality-control problem. However well-intended, these so-called "first-wave reforms" at best slow down real mathematics reform and, at worst, make it impossible.

Finally, students and teachers must become a part of the mathematics reform process. No matter how painstakingly conceived or intrinsically good an idea or program is, its successful implementation depends upon what goes on in classrooms. Teachers are as much victims of the present school system and mathematics curriculum as are students. For the most part, our teachers have received a skimpy education in mathematics and science—and most of that in methods courses. Few teachers, especially at the elementary grades, are comfortable with science or mathematics. At best, teachers have been trained in a curriculum unable to produce the outcomes demanded by the changing needs of society. Under these circumstances it is unrealistic to expect existing teachers to become firebrands for reforms imposed by legislative fiat or executive order. Teachers need information, materials, instruction, support, and above all, time. Precious little of these are available at present, and it will take a substantial financial commitment to make them available. There are no cheap short-cuts in the reform of mathematics education.

MINORITIES AND MATHEMATICS REFORM

> At all higher levels of proficiency . . . White students consistently outperformed Hispanic students, and Hispanic students consistently outperformed Black students (NAEP, 1988a, p. 44).

Grim as this picture of mathematical illiteracy and incompetence is for all Americans, these statistics are, by nearly every measure, tragically worse for minorities. Yet there is a brighter side. Ironically, the only significant improvement in test scores in the past few years has been among minority student populations. The recent focus on the education of minorities, particularly so-called "interventions" in mathematics and the sciences, yields several insights. First, there is a strong confirmation of the theory that everyone can learn—even mathematics. Second, although the differences remain substantial, between 1978 and 1986, "Black and to some extent Hispanic students have closed the performance gaps relative to their White peers" (NAEP, 1988a, p. 21). That the scores of White Americans over the same period have remained nearly stable validates the importance of programs aimed at increasing minority participation in science and mathematics. Third, because educational failures frequently appear at their worst among minorities, they function as "diagnostic direction finders," pointing towards specific problems in learning—and to their remedies. The work of Uri Treisman at the University of California-Berkeley, discussed later in this paper, is perhaps the most significant example of this phenomenon. In short, it confirms the common-sense judgment that what works well for minorities usually works well for all students.

Finally, it should be noted that research into the effects of linguistic and cultural differences on mathematics learning and achievement is at such a primitive stage of development that it has little to offer at the present time, either as an explanation of low minority achievement or as a guide to curricular and/or instructional methodology. Eleanor Wilson Orr's popular work, *Twice as Less: Black English and the Performance of Black Students in Mathematics and Science* (1987), has been recently adjudged "uninformed and somewhat naive," while "the racist implications of Orr's hypothesis are inescapable and inexcusable" (Baugh, 1988, p. 400). Other than the obvious fact that adequate skills in the language of instruction correlate positively with mathematics achievement, the research in this area shows little more than that "the influences of language and culture on mathematics learning are very complex" and that much more research is needed (Cocking and Mestre, 1988). These factors combine to suggest that the best way to increase minority participation and performance in math and science is to target school districts with large minority populations with the best curriculum available.

THE OLD CURRICULUM

> By fifth grade a lot of people know: (1) they are worthless human beings, (2) they will never be able to do math, and (3) they hate math. But we are not through with them yet . . . state law mandates more math, more drills reinforcing the three lessons they have already learned so well (Raspberry, 1989a, p. A-23).

The American math curriculum consists of nine years of drill in arithmetic, followed by an algebra sequence which is at once beyond the level of abstraction for which students are prepared and rooted in routine mechanical manipulation of symbols disassociated with the real life problems from which they might arise. For most students, the *coup de grace* is inflicted with a blunt instrument called plane geometry—too abstract, too other-worldly, too difficult for the survivors of the death march from arithmetic to algebra. We not only teach mathematics poorly, we train people to fear and loath it (Skemp, 1987). It is no surprise to find that "mathematics is the worst villain in driving students to failure in school" (NCTM, 1989).

The mathematics curriculum suffers from all the commonplace afflictions of "dumbed-down" text books, tracking, and confusion between learning and memorization found in other subjects. Moreover, mathematics education is especially burdened by the attitudes of parents, students, and teachers who share a set of mathematical myths and misconceptions held by the larger society. These include the beliefs that not everyone can learn mathematics, that to be good at math is to be proficient in rapid pencil-and-paper calculations (along with its corollary that to use calculators and computers is cheating), and that most students will never use the mathematics they might learn.

In many ways, these wrong notions and the present mathematics curriculum are reflections of one another, but a clarity within this hodgepodge of problems is central to mathematics education seldom found in other disciplines. This clarity is demonstrated nowhere else in the school curriculum as clearly as in plane geometry, a course with a reputation so bad that fewer than half of American students even attempt it, and of those who do, most do not learn it (Wirszup, 1984, p. 6). In 1959, Dutch mathematicians Pieter and Dina van Hiele made "one of the most important breakthroughs in the psychology of learning and teaching geometry." The essence of their discovery was to recognize that there were "five levels of psychological development in geometry," each of which must be passed through before a student can understand material presented at the next level. Since most American students enter plane geometry at levels one and two, and it is generally taught at level five, they are being asked to do the impossible—to master a subject for which they lack the prerequisites and which is taught over their heads. As anyone who has tried knows, learners cannot memorize their way through plane geometry. Although the work of the van Hieles went largely unnoticed in the West, it was quickly integrated into the Russian school mathematics curriculum through the introduction of geometric concepts in the early elementary grades.

Several efforts have aimed at making the existing curriculum work more efficiently. For example, educator/publisher/publicist/salesman, John Saxon has developed high school mathematics text books based on his personal experience of having "made an A the third time" he took trigonometry. Saxon made the startling discovery that "if most of the emphasis was placed on the review and just a little time was spent on the new topic," results could be obtained "beyond his wildest dreams" (Saxon, 1988). Rooted in the "review method," the books emphasize a "Back-to-the-Basics" approach. Already routine drill problems are broken down even further, and more time is spent on task. "[S]tudents will learn to work the problems, but still will not understand," but that's all right, says Saxon, because "understanding comes gradually over a long period of time." Heavily advertised in education publications, the Saxon books reportedly were being used by over 2,500 schools in all 50 states in 1986-87. Saxon claims that a majority of schools that have used the last three books in the series report an improvement of 20 percent in college board scores and a 100 percent increase in fourth-year mathematics enrollment and in physics enrollment (Saxon, 1988).

Much of the patchwork which passes for reform is merely an effort to get more kids though the math-science curriculum, *as it is*. Thus we see a concentration on recruiting promising students into programs designed to enrich, or to bridge the gaps between, performance at one grade level and expectations at the next. In addition, a rigid, back-to-the-basics, drill-sergeant mentality present in many reform programs simply reinforces the worst aspects of nineteenth-century instructional methods and practices. While John Saxon's approach is typical, it has much company, widely encouraged by mandated performance standards in an out-dated curriculum.

INFORMATION TECHNOLOGY AND MATH REFORM

> We live and die on technology that eats and sleeps on math.
> —Tom Berger, National Science Foundation (as quoted in Raspberry, 1989b, p. A-19).

The urgency for reform in mathematics education cannot be separated from the changes being wrought within our society by the information technologies. The influence of these technologies on mathematics itself fuels that demand for a new school mathematics curriculum. The National Council of Teachers of Mathematics observes that "the use of technology has dramatically changed the nature of the physical, life, and social sciences; business; industry; and government" (NCTM, 1989, p. 3). We live in a world in which "information is the new capital and the new material, and communication is the new means of production"—a world where work itself has become learning, and management has developed into a teaching function (Zuboff, 1989, pp 395-97). Not surprisingly, in such a world the mathematics of the nineteenth-century mechanical, industrial technology is badly dated. Clearly, the ubiquitous computer is at center stage in this revolution.

In the first instance, the "computer has broadened the areas of mathematical application into the social and life sciences. In turn, this extension has stimulated the growth of mathematics itself so that "more than half of all mathematics [has] been invented since WW II" (NCTM, 1989, p. 7-8). It is simply no longer possible for anyone to avoid mathematics. The need for mathematical thinking has become as widespread as the technologies of the information society.

To understand the necessity for a new mathematics curriculum and the role of technology within it, it is important to see the connection between nineteenth-century industrial technology and current mathematics education. The old industrial economy required mathematics for elite managers, and a "dumbed down" curriculum for workers—for whom, as mere human extensions of machines, it was not only unnecessary, but undesirable to possess higher-order thinking skills. In the age of information, nineteenth-century mathematics for the few condemns the many to the frustrations of attempting to live in a postindustrial society with only the knowledge and skills of an industrial past. Of equal importance is the urgency of having an informed electorate. "Current issues such as environmental protection, nuclear energy, defense spending, space exploration, and taxation all involve many interrelated questions. Their thoughtful resolution requires technological knowledge and understanding" (NCTM, 1989, pp. 3-4).

Several enormous difficulties confront any school attempting to integrate computer technologies into the curriculum. Not the least of these is cost. Despite the public relations hype on the availability of computers in the schools, most experts agree that there is not a single classroom in the country—at any level of school—adequately equipped to take full advantage of the educational potential of the computer. Robert Pearlman has pointed out that less capital is invested in teacher productivity than in any other profession ($1,000/teacher vs. $50,000/worker) across all industries (Pearlman, 1989, p. 15). Yet, even if the cost and training issues could be surmounted, the hard reality remains that currently available hardware and software is inadequate. Most software is designed to automate a curriculum in need of radical revision. Information technology at the classroom level rarely rises above the level of video-displayed textbooks, and "interaction" is often little more than page turning. Much of the software is Orwellian-like, machine-driven and monitored, drill and rote exercises, reproducing in modern form the worst characteristics of work-sheet learning. The bright spot and real hope for the school mathematics curriculum is the rapid development and deployment of the CD-ROM video disk technology. Combining state-of-the-art audio/visual/interactive/networked computer technologies, models for problem solving and simulation are being developed.

With a few notable exceptions, research and development of classroom-ready education technology lags far behind the requirements of a new mathematics curriculum. Ideally, R & D should be a collaboration between industry, schools, and universities, always under the guidance of teacher-users. In practice, the introduction of computers and software into the schools is disconnected from curriculum development and is largely market driven. Teachers are ill-informed about the potential and availability of hardware and software; they are untrained, unpracticed, and unskilled in its classroom use, and they have been involved neither in its development nor implementation decisions. The best of available mathematics software, the *Geometric Supposer* for example, demonstrates the potential of the technology as an instructional tool for restructuring the mathematics curriculum. In the hands of experienced teachers, trained in the technology and mathematically competent to make the necessary adjustments in the old curriculum, the *Geometric Supposer* is a potent adjunct to learning. Moreover, it demonstrates the incompatibility of the new technology with traditional classroom formats and methods. The premature introduction of computer technologies that present students and teachers with no more than electronic textbooks and worksheets has produced negligible results and is arguably merely an expensive means of making a bad problem worse.

THE EVOLVING CURRICULUM

> We cannot afford to have a majority of our population mathematically illiterate. Equity has become an economic necessity (NCTM, 1989, p. 4).

In a sense, the perilous condition of mathematics education well illustrates the larger issues in American education reform. Mathematics is not the only subject badly taught and ill understood; the results just show up more clearly in mathematics (Skemp, 1987). Reform experiments in mathematics are demonstrating the validity of heterogeneous grouping, collaborative learning, and the use of technology in restructured classrooms. Modern learning theory also confirms for mathematics what is true of other subject matter areas: anyone can learn mathematics, everyone learns it differently, and learning mathematics is a more constructive process than one of transmission. Students and teachers must "build" mathematics. Researchers generally agree that "mathematics is a way of using our minds [to] greatly increase the power of our thinking" (NCTM, 1989, p. 4). Thus, mathematics is an important means to develop critical thinking skills. Moreover, mathematics is the least culturally biased of all the academic disciplines, so that achievement tests in mathematics are less subjective and less open to alternative interpretations. Finally, it is clear that the reform of mathematics education requires a new curriculum, new methodology, a technologically up-to-date and restructured classroom, and a new kind of mathematics teacher. Most of these conclusions are equally valid for other subject matter areas.

Of more immediate significance for the long-term resolution of the mathematics education crisis is the broad degree of consensus within the math-science community regarding both the present inadequacies in mathematics education and what should be done about them. As testimony to this consensus, forty mathematical science and professional organizations have sanctioned the *Curriculum and Evaluation Standards for School Mathematics* recently published by the National Council of Mathematics Teachers (NCTM, 1989, pp.vi-vii).

The NCTM standards, developed over a lengthy period, involved a range of working-group participants from the education, business, science, and mathematics communities. Pieces of the NCTM curriculum standards will be familiar to many readers because they may be found in the very best math-science magnet schools as current practice. Generally, the NCTM standards describe "a vision for school mathematics built around five overall curricular goals for students to achieve: learning to value mathematics, becoming confident in one's own ability, becoming a mathematical problem solver, learning to communicate mathematically, and learning to reason mathematically" (NCTM, 1989, p. 5). It should be emphasized that these are goals for *all* students.

Specifically, the NCTM standards ask that all students be expected to develop

- "The ability to set up problems with the appropriate operations
- Knowledge of a variety of techniques to approach and work on problems
- Understanding of the underlying mathematical features of a problem
- The ability to work with others on problems

- The ability to see the applicability of mathematical ideas to common and complex problems
- Preparation for open problem situations, since most real problems are not well formulated
- Belief in the utility and value of mathematics" (NCTM, 1989, p. 4).

Additionally, "because technology is changing mathematics and its uses, [NCTM] recommends that—

- appropriate calculators should be available to all students at all times;
- a computer should be available in every classroom for demonstration purposes;
- every student should have access to a computer for individual and group work;
- students should learn to use the computer as a tool for processing information and performing calculations to investigate and solve problems" (NCTM, 1989, p. 8).

Finally, NCTM believes that to "know mathematics" one must be involved in "doing mathematics," and that "this constructive, active view of the learning process must be reflected in the way much of mathematics is taught. Thus, instruction should vary and include opportunities for—

- appropriate project work;
- group and individual assignments;
- discussion between teacher and students and among students;
- practice on mathematical methods;
- exposition by the teacher" (NCTM, 1989, p. 10).

In addition to the Curriculum Standards, NCTM has promulgated a set of Evaluation Standards. These standards "propose that—

- student assessment be integral to instruction;
- multiple means of assessment methods be used;

- all aspects of mathematical knowledge and its connections be assessed; and
- instruction and curriculum knowledge be considered equally in judging the quality of a program" (NCTM, 1989, p. 190).

NCTM recognizes the inadequacy of current testing, noting that "many existing tests cannot measure the student outcomes identified in the *Standards*" (NCTM, 1989, p. 190).

It would be difficult to overemphasize the importance of the NCTM Standards to reform and restructuring in mathematics education. They are a fine example of the kind of detailed, comprehensive groundwork that must necessarily precede large-scale, systemic change.

PROGRAMS THAT WORK

Two distinct programmatic approaches emerge from the multitude of efforts to resolve the crisis in mathematics education. The first, and principal effort, consists of programs aimed at immediately increasing the output of mathematically trained students. For the most part, minority-intervention, talented and gifted, and magnet-school programs fall into this category. The second approach is long term, and attempts to address the larger issues of mathematics education reform. It focuses on a core curriculum and changes in the methods and means of instruction.

Both strategies are needed, both are producing results. Each complements the other, but it is important to distinguish between the two approaches, for neither can be substituted for the other. The first approach is, at its core, elite in the best sense of the word. It is essentially a process aimed at identifying and moving along the "best and the brightest" and others who, by whatever circumstance, are poised to take advantage of the best mathematics education currently available. The second is egalitarian and aims to create a more broadly scientifically literate society. The long-term viability of the American economy in the information age depends on the success of both approaches.

Using the NCTM standards as guideposts, four mathematics programs currently in use within American public schools have been selected for presentation here. Each has been in place from three to six years. Key components common to the four models include an emphasis on teacher support and training, new curricular materials, a technological dimension, collaborative learning techniques and restructured classrooms, achievement of the NCTM Standards, parent involvement, and the use of summer activities and institutes to achieve reform objectives.

The University of Chicago School Mathematics Project

Of the major curricular revisions in process, the most far reaching and fully developed is the University of Chicago School Mathematics Project (UCSMP), a joint undertaking of the mathematics and education departments of that institution. Developed and operated under the direction of Professors Issak Wirszup and Zalman Usiskin, the project is funded primarily by the Amoco Foundation. UCSMP has developed a carefully crafted effort, making good use of a new international literature on innovations in curriculum, drawing especially on the Soviet experience. Looking ahead to the mathematics skills that will be needed in the twenty-first century, UCSMP has developed, field tested, and evaluated new curricular materials and instructional methods from preschool through high school.

A key goal of these materials is to even out the traditional pace of instruction. The elementary curriculum is designed to introduce students to a wide range of mathematics, including gathering and analyzing data, probability, geometry, algebra, and standard arithmetic. In grades seven and eight, "transitional mathematics" materials are available to ease students into algebra and geometry. Some of the content features of the completed secondary curriculum include the integration of applications, a heavy emphasis on data handling, advanced work in statistics and probability that builds on earlier study in the area, work with discrete mathematics, and geometry and algebra taught in all years.

The developers of the UCSMP program are pioneers in designing and using technology that pushes students to develop their mathematical intuition and their higher-order thinking. Calculators and computer software that produce graphs, for example, are integral to the curriculum. One of the more difficult areas of mathematics instruction has always been the graphing of functions, establishing the relationship between the tangents and perpendiculars at particular points and the effects of parameter changes on the graph. Not only are these problems time consuming, but the solution often requires drawing skills that many students lack. Students easily get bogged down in the confusion of plotting points and quickly become lost in the details, often not fully understanding the underlying concepts. The "function graphing software" eliminates all of these difficulties. Seated at a computer console, the student types in the equation of the function and the "window" through which the function is to be observed. At the press of the key, the graph appears on the screen. The student can zoom in on it, change the parameters, superimpose it on other graphs, and draw its tangents and perpendiculars. All of this can be done by a skilled teacher or student though a sequence of carefully drawn figures, but not nearly as efficiently or effectively. It is comparable to trying to make sense of an animated movie cartoon through the actual drawing and observation of the individual frames. It can be done, but not cost effectively, and not with any great enjoyment.

The strongest feature of the UCSMP is that it has a complete set of secondary tests with supplementary materials. The books stress readability and are written in colloquial English so as to be less distancing and more accessible to students. Typically, students describe the texts as "the first math books I've ever been able to understand," and that reading them "makes complicated problems seem simple." Other important features of the UCSMP are its summer institutes (supported by the Ford Foundation) and fall user conferences designed to serve both teachers and administrators in the implementation of the UCSMP curriculum.

Paul Shoecraft's MOVE-IT Mathematics

Most of us are so inured to the idea that mathematics is necessarily a tedious, demanding chore that it is difficult to imagine a classroom in which all kids learn mathematics—or, even more remote, a classroom in which all kids enjoy their mathematics lessons. The idea that learning mathematics should be enjoyable is one of several principles on which Professor Paul Shoecraft at the University of Houston at Victoria grounds his MOVE-IT (Math Opportunities, Valuable Experiences—Innovative Teaching) program. At the Port O'Connor (Texas) Elementary School not only are all kids learning math, all of them are nuts about it.

Nicole, a first grader at Port O'Connor who is in her second year of the program, sat on the floor writing the answer to a problem she had just worked. She gripped her pencil in her fist—her head well ahead of her motor skills.

"What are you doing, Nicole?" I asked.

"Adding fractions," she said, glancing at me briefly but squarely in the eye. Indeed, there in front of her was a set of problems involving the addition of fractions—some of which would make many ninth or tenth graders tremble.

"Why, you're too little to add fractions," I teased. She looked at me hard and said, "Am not, I'll show you." With that, she started to work on 2/3 +1/6 = _____ . Reaching in the box in front of her, she hunted for two pie-shaped wedges, one labeled 2/3 and the other 1/6. She fitted them carefully, then shuffled the pieces in the box around until she found two labeled 1/3, again fitting them carefully together. She puzzled a moment, then quickly traded in the two 1/3s for four 1/6s. She placed them together, then counted quickly, pointing to each wedge as she did, "One, two, three, four, five-sixths! See? She looked at me and grinned, picked up her pencil and scrawled a legible, albeit crude 5/6 on her paper.

The amazing thing about Professor Shoecraft's program is that when you see the students doing their math and liking it, the idea doesn't seem remarkable at all—indeed, you are struck by its ordinariness. The essence of the program is to introduce each mathematical concept in at least three different ways through the use of manipulatives and to replace memorization with three skills: count up, count down, and skip-count. In many schools, manipulatives are used as supplementary materials and grafted onto the old curriculum; in Shoecraft's schools, the manipulatives drive and make possible a new, more advanced curriculum.

In recent tests, Port O'Connor kindergartners achieved at an average grade level of 3.0 on the Woodcock-Johnson test, with the lowest performer reaching the 2.1 grade level. "Special education" first graders achieved at grade level 2.1 on the same standardized test. These are unexpected results. Port O'Connor is in a poor rural community where the students have not been known for academic excellence or good high-school graduation rates.

Still, Shoecraft complains that these tests don't reveal how much more the students have really learned. The use of tiles, coins, and balance beams, among other manipulatives, has given these children a strong sense of number, magnitude, place value, equality, areas, and variable. More importantly, when these students do their additions, subtractions, multiplications, and divisions, they are not blindly performing operations, they are understanding what they are doing. Nicole knows that "18 divided by 2 equals 9" means that 18 "things" can be put into "9 piles of 2." She also knows that 6 times 4 equals 4 times 6 equals 24 because 4 + 4 + 4 + 4 + 4 + 4 = 24 and 6 + 6 + 6 + 6 = 24, or as Nicole put it, "4, 8, 12, 16, 20, *24!*"

"Incidentally," Shoecraft volunteered, "I let them count on their fingers." As he said that, I felt my hands automatically go rigid at my side. "Oh?" I grunted suspiciously. Sensing my discomfort, he asked, "Is that a problem for you?" I said, "Well, it's not the way I learned it." Patiently, Shoecraft explained, "You have to ask yourself what children are trying to do when they use their fingers?" Tentatively I offered, "Trying to figure the answer out?" Smiling at me, he asked, "Do you really have a problem with that?" Looking around at that happy classroom, I found I didn't anymore.

As at the University of Chicago, algebra and geometry are integral to Port O'Connor's elementary school curriculum. Here, students determine the area of irregularly shaped geometric figures using "geoboards" and elastic bands. Algebra is introduced first through the balance beam as a means of establishing the equality of different equations. Students also learn to graph coordinates (in seasonal patterns of pumpkins and ghosts) and to construct vertical and horizontal bar graphs.

Shoecraft's program works—and it works for kids from a variety of socioeconomic backgrounds. Both Port O'Connor and neighboring Wharton Independent School District are eliminating ability grouping and tracking through Shoecraft's program. The Wharton student population is a mix of Hispanics (30 percent), Blacks (30 percent) and Whites (40 percent). The crucial ingredient is the total commitment to the philosophy that, given a multiplicity of learning approaches, every kid can learn math. If one way doesn't work, then another one is tried.

Uri Treisman's C^3 Summer Institute

Targeted at the "bottom 80 percent of students" entering ninth grade algebra I in the fall, the C^3 (Content, Competence, Confidence) Summer Institute is the creation of Professor Uri Treisman at the University of California, Berkeley. While the immediate objective is to help students bridge the gaps between elementary school mathematics and high school level mathematics , it simultaneously involves teachers in the reconstruction of the pre-algebra/algebra curriculum. The C^3 Summer Institutes are run in conjunction with a school's regular summer school program. In the morning sessions, teachers work with students in problem-solving workshops organized around rich curricular material. Afternoons are devoted to teacher seminars, which provide them with opportunities to become familiar with the broader mathematical implications of the new curricular material. In these seminars, groups of four teachers, working with a mathematician, are responsible for developing the curricular content of the course. The same groups of four who cooperatively teach in a morning classroom work together on the curriculum. Among the most important features of the C^3 Institute are the use of collaborative learning techniques for both students and teachers, a total commitment to developing the mathematics from real applications, data gathering, and problem solving.

The math applications used in C^3 are so compelling and full of movement that, at times, it might be difficult to distinguish a C^3 classroom from a physics lab. Yet, even this analogy fails because students are too excited; stopwatches in hand, they are enthusiastically cheering their team's car as it races against others down a long, inclined plane. Plotting the recorded data, students see the real-world significance of the intersection of curves; develop a sense of the connections among data, graphs, and events; and integrate algebraic, geometric, and physical concepts with an intuitive introduction to calculus. Reversing the process, students are given graphs and asked to construct situations that might produce particular sets of curves.

In another C^3-designed application, students develop the mathematical concepts of increasing and decreasing functions by filling a common chemistry flask and recording the height of the water for given volumes—then plotting the data. Again, the process is reversed and students construct possible container shapes and different flask-filling scenarios that might explain given graphs. In both of these examples, the key is the development of mathematical concepts out of the physical situations. It reverses the order in which the applications traditionally are taught long after the mathematics has been developed in its most abstract form—if applications are taught at all.

Funded by the National Science Foundation, the project has been successfully piloted in California's Orange County and Stockton School Districts in 1988 and 1989. It was introduced to the San Francisco public schools in summer 1989.

Mathematics and Science Education Network Pre-College Program

The University of North Carolina's Mathematics and Science Education Network Pre-College Program (MSNE) is aimed at increasing the number of underrepresented minority students who pursue mathematics, science, or related fields of study at the university (Jones, August 1988). MSNE operates from four network centers, providing academic enrichment activities for students as well as in-service training for participating teachers. MSNE components include a five-week Summer Scholars Program held on the university campus, Saturday Academy Programs held at the network centers, Academic Enrichment Classes, elective classes held daily at each participating junior high/middle school, and Parental Involvement Workshops in using math manipulatives and in Family Math, a program developed by the Lawrence Hall of Science at the University of California, Berkeley.

Begun during the 1987-88 school year, the MSNE program has served 707 students and 27 teachers from 28 public secondary schools in its first year and a half of operation. The program clearly has demonstrated that it can move noncollege-bound, minority students into college-bound classes in mathematics.

TOWARD A COMPREHENSIVE PROGRAM FOR REFORMING AND RESTRUCTURING MATHEMATICS EDUCATION

> . . . people only accept change when they are faced with necessity, and only recognize necessity when a crisis is upon them.
> —Jean Monnet (*Memoirs*, p. 109 as cited by Rostow, 1981, p. 83).

The model programs and interventions described in the previous section demonstrate several points. First, the success of many intervention programs appears to result from changes in classroom organization and sociology. Classrooms structured as workshops, collaborative learning techniques, and peer tutoring may be as important as using problems based in experience, manipulatives, and other new curricular materials. Second, as the work of Paul Shoecraft, his associates, and the UCSMP demonstrates, the mathematical achievement levels of *all* students can be elevated by using a modern, untracked curriculum. Third, the programs demonstrate the willingness of some very dedicated mathematics teachers and educators to bring about real mathematics reform in spite of the obstacles. No single institution at any level has the singular responsibility, mission, or authority for reforming mathematics education. Each of these programs resulted from the hand-crafted efforts of individual teachers and professors. Yet since financial support for these efforts comes from foundations, business, and various federal agencies, these programs are all vulnerable to the vagaries of uncertain continued support.

Two simultaneous strategies suggest themselves. The first is to encourage as much foment and organization within the community of school mathematics teachers as possible. While a great deal of mathematics reform is currently underway, more is needed. Many of the existing efforts are directed at patching up inadequacies in the old curriculum and bridging the gaps between elementary, secondary, and college mathematics. Most programs affect a fairly narrow spectrum of students. Inadequate as these efforts are, they must be encouraged and replicated. If the time frame were longer, if there were no issues of equity to resolve, and if the two-tier society were an acceptable alternative to a scientific and technologically literate America, this state of *ad hoc, laissez-faire* mathematics reform might be tolerated. Such is clearly not the case. Thus a second strategy of large-scale, systematic reform and restructuring must also be pursued.

The second strategy involves creating the mechanisms for comprehensive, long-term change in mathematics curricula in all schools. The effort must proceed along several fronts simultaneously, exploiting the opportunities for change already created by successful interventions and experimental models. From the plethora of programs, the outline of a comprehensive program of reform and restructuring of pre-K through 12 mathematics education is emerging. In skeletal form, such a program would involve collapsing the content of the current K through 8 arithmetic curriculum into grades pre-K through 3 and moving much of the content of the UCSMP "transition mathematics" into grades pre-K through 6. This accomplished, it is possible to bring into grades 7 through 10 a sequence of courses to include modernized, technologically up-to-date algebra, geometry, calculus, and/or finite mathematics, and statistics. We do not have to invent the ingredients which make up the reform program. As yet missing are the coordination, focus, organization, and consistent funding necessary to bring about large-scale systemic change.

The necessary components for the successful reform of precollegiate mathematics education already exist. In scatter-shot fashion they are represented among the very best practices in mathematics education. That mathematics reform should be so idiosyncratic in its early stages—dependent on a "super teacher" here, an outstanding principal there, and everywhere on irregular external funding sources—is in large part attributable to the decentralized characteristic of the nation's 16,000 local school districts. The problems have been identified and so have the solutions. The NCTM Curriculum Standards have given coherence to the great variety of reform proposals, programs, and practices. What remains to be accomplished is the large-scale transfer of these into all schools. This task has political, financial, and psychological dimensions that must be addressed simultaneously. It is made more difficult because effective institutions of transfer rarely exist. To create such institutions and other mechanisms of change will require a well-organized, carefully crafted effort.

Despite all the good works and programs, as it stands now, if a school, school district, or state wants to embark on a program to implement the NCTM Standards, there is no place it can go to obtain an assessment of its current mathematics education programs or a set of concrete proposals and programs to bring about the necessary changes.

Consider the obstacles confronting reform-minded mathematics teachers. After becoming aware of the need for a new curriculum and overcoming the opposition or indifference of colleagues, they must obtain permission to change the curriculum from administrative authorities. The teacher must argue the case for new textbooks and supporting materials such as calculators and computers and then must face the daunting tasks of learning the new material, creating a new collaborative classroom environment, and constructing lesson plans for all of the above. There is simply no room in the average mathematics teacher's school day to accomplish even a small fraction of these minimal requirements for change.

New programs can be initiated in schools through a variety of mechanisms, but, unless they have the enthusiastic support of teachers, they are unlikely to produce worthwhile results. Most model programs examined in this study were begun in schools through teacher initiation with strong support from administrators. By and large, reform-minded teachers learn about curricular revisions through membership in associations of mathematics teachers or in their unions.

Finally, of the myriad steps necessary to implement the restructuring of mathematics education, none is more important than re-educating existing teachers in the new mathematics curriculum and improving the preparation of new mathematics teachers. These must become the first priorities of every school, school district, and state. It is no less than a matter of national socioeconomic survival.

Chapter 5. Mathematics and Science Education: Reclaiming Minorities at the Elementary-School Level

by

David Trippe Garza*

INTRODUCTION

Key to the national debate on the quality of American public education is the pervasive problem of how to improve the teaching of science and mathematics education. At issue are important questions which go beyond mere differences in pedagogical remedies. They encompass issues of public policy suggesting significantly different outcomes for the goals of equity and excellence. Thus, for example, more fervent supporters of enhanced preparation in science and mathematics call for enrichment programs favoring a select core group of college-bound students. Spurred by the critical necessity of alleviating the shortage of scientists and engineers, they advocate developing a talent pool by establishing programs designed to give students identified as academically gifted a more intensive curriculum in mathematics and science.

Supporters of an alternative viewpoint, by contrast, call for more comprehensive, and equitable reforms, not only to halt the deteriorating quality of science and mathematics education, but also to improve teacher preparation. They are especially concerned that measures to improve the quality of education should be concentrated on those for whom the effects of current practices are most catastrophic—the nation's growing number of minority and disadvantaged students who make up a majority of the student population in the largest urban school systems. Only through appropriate early interventions that modify unsuitable instruction and curriculum can schools abate the factors leading to disproportionately high dropout rates and correspondingly large minority inmate populations within the nation's prison systems.

Although apparently dissimilar in their pursuit of social and educational agendas, advocates of both positions start from the same premise: namely, American K through 12 schools have failed to produce a sufficiently well educated and trained workforce capable of participating in today's technological economy. Both acknowledge that the nation's declining world economic position has placed an especially urgent emphasis on the need for improved mathematics, science, and technology education to attract people to science and engineering careers. Yet, the time has passed when established White males, even at increased rates of participation, might fill these needs (National Science Foundation, 1985, p. 9). Minorities, already 20 percent or more of the population and growing vigorously, represent an important source of well-educated personnel. However, increasing the numbers of qualified minorities can only be realized by addressing the appalling social and educational circumstances which restrain minority children's access to equal career opportunities in mathematics and science. Interventions must begin at the preschool and elementary levels at which minority students first experience themselves as failures and nonlearners.

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There is considerable controversy over the general failure of K through 12 public education to provide adequate preparation in mathematics and science. Successive national assessments of mathematics and science have found substandard performance, creating the fear that America may be falling permanently behind other industrial nations in the percentage of its workforce trained in higher-order skills. Declining standardized test results are repeatedly cited as evidence of the deficiencies of public schools and the incompetence of teachers. Further evidence of this decay is found at the postsecondary level, at which the proportion of students graduating with baccalaureate or higher degrees in science and engineering is smaller today than it was in the 1970s (National Science Foundation, 1985, p. 4). Although a variety of remedies are slowly emerging, the fashionable response of most legislatures and school districts has been to stress special provisions for students considered to be especially "gifted and talented." Even though nationwide estimates of the number of gifted and talented students is about 2.5 million or only 5 percent of all students, 23 states now mandate such provisions and more are considering such a policy (OTA, December 1988, p. 86).

The need to promote extensive improvement in the quality of science and mathematics education is evident. Mathematics and science educators point out that these subjects embody the essential knowledge and cognitive skills critical to the nation's technological progress and economic competitiveness. Widespread failure to teach science and mathematics adequately, especially to talented students, has led to a national crisis threatening our very economic and technological survival. Apprehension over declining world status and the squandering of science and engineering talent has created pressing demands for redirecting major federal funding to increase the pool of scientists and engineers.

At the same time, many educators and social observers are equally concerned about the serious consequences for the national welfare resulting from the adverse educational plight of minorities—Blacks, Hispanics, native Americans and Asians. Causes of low minority achievement in education are directly correlated with their adverse economic and social circumstances and the persistence of a two-tier society despite several decades of integration efforts. Indeed, the socioeconomic status of minority school children is in many cases so bad that it has become popular in many areas to refer to them as "at risk." In addition to their gross underrepresentation at all levels of education, this label reflects the fact that more than 40 percent of minority children live below the poverty line.

Proponents of improved education for minority and disadvantaged children urge a national policy of educational equity to establish appropriate initiatives to improve the educational achievements of minority youth. They contend that a policy which would ignore the compelling educational needs of this fastest growing segment of the population while striving for an aristocracy of excellence in mathematics and science would jeopardize the nation's long-term ability to supply an adequate workforce for a high-technology economy. Moreover, to permit the condition of minorities to become institutionalized into that of a permanent underclass would be inconsistent with the nation's democratic values.

This chapter examines factors that contribute to systemic deficiencies in mathematics and science education, especially for minorities. It reviews the policy options for educating teachers of minority and disadvantaged students in science and mathematics. New creative, activity-based programs provide solid curriculum content with innovative instructional strategies for educating teachers to increase minority student motivation, participation, and performance. Although conventional wisdom tends to promote enhancement of mathematics and science education primarily for high school and postsecondary students, efforts to successfully broaden the participation of minority students in mathematics, science, and related career choices must be emphasized during early elementary school.

STUDENT PERFORMANCE IN MATHEMATICS AND SCIENCE

Report cards of the National Assessment of Educational Progress (NAEP) in mathematics and science for 9-, 13-, and 17-year-olds offer disturbing evidence of the inability of the current educational system to train students to reason mathematically and analytically. The reports, conducted from 1969 to 1986, conclude that the mathematical and science skills and knowledge of more than half of the 17-year-old students are inadequate for jobs requiring technical skills. "Most students, even at age 17, do not possess the breadth and depth of mathematics proficiency needed for advanced study in secondary school mathematics" (NAEP, 1988a, p. 10). Only half demonstrated an understanding of "even moderately complex mathematical procedures," especially if they involved understanding algebra or geometry (NAEP, 1988a, p. 16). With respect to science, only 7 percent demonstrated the prerequisite knowledge and skills needed to perform well in college-level science courses (NAEP, 1988b, p. 6). Comparisons of three national assessments of science indicate that students at ages 9, 13, and 17 knew less about physical science in

1972-1973 than they did in 1969-1970, and even less in 1976-1977 than in 1972-1973 (NEA, 1982b, p. 28).

While the results were dismal for all groups of students, glaring disparities appeared in science and mathematics proficiency among minority students. Only 15 percent of the Black and Hispanic 17-year-olds assessed in 1986 demonstrated the ability to analyze scientific procedures and data, compared to nearly one-half of the White students at this age (NAEP, 1988b, p. 7). Despite recent gains, primarily in lower-level skills and basic concepts, the average proficiency of 13- and 17-year-old Black and Hispanic students remains at least four years behind that of their White peers. In mathematics, "disparities were especially striking among 9-year-olds at Level 200 [basic multiplication and division skills], among 13-year-olds at Level 250 [beginning one-step problem solving], among 17-year-olds at Level 300 [multistep problem solving and algebra]. Thus as age and level of proficiency increased, so did the performance gaps between racial/ethnic subpopulations" (NAEP, 1988a, p. 44).

These NAEP assessments clearly validate that disparities in students' performance in science and mathematics begin early and increase in the upper grades. Instead of an expected majority of 9-year-olds having mastered basic mathematical operations and beginning problem solving, NAEP found that only 21 percent had attained this level. One-quarter failed to demonstrate even beginning skills and understanding (NAEP, 1988a, p. 149). About two-thirds of the 9-year-olds could perform simple addition and subtraction computation involving regrouping. On exercises assessing basic noncomputational skills, however, performance was lower: for example, only 4 percent of the 13-year-olds and 18 percent of the 17-year-olds could find the area of a right triangle. Significantly, the only noncomputational skills for which students demonstrated any high level of proficiency were those most likely to have been learned and practiced outside school. Accordingly, 85 percent of the 13-year-olds could tell time and 81 percent of the 9-year-olds could read a bathroom scale. In general, however, performance showed a lack of understanding of the basic concepts and processes associated with fractions, decimals, and percentages.

Although 9-year-olds showed gains in science in the 1986 assessment, these gains only served to bring their average performance back to the 1970 level (NAEP, 1988b, p. 34). Explanations for these problems cover a range of factors. Only 33 percent of the nation's high schools offer more than one year of science (biology and chemistry) and mathematics (algebra I, algebra II, and geometry). Only 31 percent offer a full calculus course, and 80 percent offer one year of physics (OTA, June 1988, p. 27). In science, students have little access to laboratories or independent research; they seldom develop the higher-order thinking or problem-solving skills needed for advanced learning.

More than two-thirds of the third-grade teachers surveyed by NAEP reported spending 2 hours or less each week on science instruction. Eleven percent of third graders assessed in 1986 had no previous science instruction; only 58 percent of the eleventh-grade students were taking a science course at the time of the assessment. One year of biology is the only natural science taken by at least half of the nation's high school graduates. Almost the same proportion graduate from high school with no mathematics beyond algebra. Among high-school seniors in 1980, 50 percent of Whites but only 39 percent of Blacks had taken algebra II. Half of all Whites but only 39 percent of Blacks had taken geometry. Thirty seven percent of Whites but only 28 percent of Blacks were enrolled in chemistry.

Again, studies such as these illustrate how crucial it is to begin measures to improve mathematics and science education in the earliest years of the learning process. Especially for minorities, any realistic attempt to address the problem of the underrepresentation in science, mathematics, and technology education and to increase their access to careers in engineering, science, and technology must begin far in advance of the high-school level (Texas Alliance for Minorities in Engineering, 1987, p. 149).

The NAEP mathematics and science report cards document that schools and teachers typically rely on fragmentary, unrelated curriculum plans. The standard order in which lessons are presented is more apt to conform to the pressures of the school calendar than to any linkages among the different science disciplines—e.g., biology, chemistry, and physics. Instructional procedures are linked to formal, didactic patterns of teaching which neglect laboratory work and higher-order thinking exercises. Teachers emphasize rules and definitions and the repetitive practices of rote learning. Most teachers continue to rely on chalkboard presentations and workbook exercises. These are characterized by dependence on textbook interpretations and stilted explanations unrelated to daily experience. Mandated competency tests, standardized testing, and teacher evaluation procedures customarily merge to shape both the curriculum and permissible instructional approaches.

One consequence of learning mathematical skills through rote, arithmetical drill and practice is that students cannot use these concepts to solve complex problems. "Results suggested that if students understood the operation involved in routine one-step verbal problems, finding the solution presented no difficulty" (NAEP, 1988a, p. 30). For example, 38 percent of the 9-year-olds and 82 percent of the 13-year-olds correctly solved a problem similar to the following:

> Sue had 342 stamps in her collection. If 278 of them were US. stamps, how many were foreign stamps?

However, students could not solve nonroutine or multistep problems. NAEP concluded:

> Although it may be argued that children must learn to solve simple one-step problems before they can have any hope of solving more complex problems, an overemphasis on one-step problems may teach them only how to routinely solve such problems. It may also teach them that they do not have to think about problems or analyze them in any detail (NAEP, 1988a, p. 31).

Elementary science and mathematics instruction tends to be especially dependent on rote, textbook-driven approaches. In general, this has been a consequence of the inferior preparation of teachers; as noted below, teachers often have earned as few as three college hours in science and mathematics. These teachers tend to spend as little time as possible preparing for classes. While approximately half of the third-grade teachers assessed by NAEP in 1986 reported spending only one to two hours weekly providing science instruction, approximately 10 percent noted they devoted that much time maintaining classroom order and discipline.

As one might expect, elementary students—especially minority youth in less affluent urban and rural schools—are typically inadequately prepared in science and mathematics when they reach middle schools. Moreover, the students have already developed prejudices against learning these subjects. NAEP surveys have found that only about half of the 9-year-olds feel excited or successful in science; they rank it as one of their least favorite subjects. By age 13, one-third indicate that they do not want to take any more science than they have to. The succeeding tedious duplication of a textbook-bound curriculum, lack of hands-on or laboratory experience, and the repeated anxiety they experience in middle school soon convince minority youth of their permanent disinterest in or incapability of learning either mathematics or science. This pattern, bolstered by the self-fulfilling negative expectations of teachers (see discussion below) personifies the experience of minorities. Their subsequent high rates of alienation (the push-out phenomenon) contribute substantially to the low enrollments observed in high-school science courses.

ACQUISITION OF SCIENTIFIC AND MATHEMATICS SKILLS BY MINORITIES

The accepted pedagogical tenets and instructional practices that have contributed to the alienation and deficiency of White students in mathematics and science have led to even more serious problems for minority students. Black and Hispanic students have similarly experienced mathematics and science primarily through hackneyed teacher lectures, paper-and-pencil computational drills, and unsuitable textbooks. Moreover, the routine indifference and insensitivity of teachers to the distinctive linguistic, cultural, and cognitive aspects of minority learning and instructional needs have placed them at a decided disadvantage in mastering mathematics and science concepts and problem-solving skills.

As a predominantly youthful and actively child-bearing segment of the workforce (with a median age of 23 compared to 32 for Whites and a birth rate of 2.9 children per female compared to 1.7 for Whites), minorities represent a potentially important source of recruitment for jobs that require higher-order thinking skills. By 2010, one in every three 18-year-olds will be Black or Hispanic, compared to one in five in 1985 (Task Force on Women, Minorities, and the Handicapped in Science and Technology, 1988, p. 12). Thus, minorities constitute a significant segment of the labor pool to which American businesses must turn in search of employees with higher math, science, and reasoning capabilities. Unfortunately, however, present efforts to increase the percentage of minorities in math and science are largely ineffective. Blacks, Hispanics and Asians respectively represent 8, 2, and 6 percent of freshmen intending to major in natural sciences and engineering. Although Blacks, as the largest minority group, constitute about 15 percent of the population (and 9 percent of the college freshmen), they receive only 2.6 percent of the bachelor's degrees and 2 percent of the doctorates in science and engineering (OTA, June 1988, pp. 50-52). Thus, current participation and performance of minorities in mathematics and science is not encouraging.

In the nation's high schools, most minority students are less likely than Whites either to be enrolled in an academic curriculum or to take advanced mathematics courses. In 1985, 81 percent of Whites, compared with 65 percent of Blacks and 27 percent of Hispanics were enrolled in these programs. At the post-secondary level, White males are far more likely to earn degrees in science and engineering than women, Blacks, or Hispanics. Blacks and Hispanics together earn approximately 3 percent of the science, engineering, and physics degrees; 2 percent of the chemistry degrees; 3 to 5 percent of those in math and computer science; and perhaps 3 percent of biological science degrees (Texas Alliance for Minorities in Engineering, 1987, p. 10). In 1985, Blacks and Hispanics represented only 7.3 percent of graduate enrollment in science and engineering fields (National Science Foundation,1988, Table 53, pp. 217-19). Of 8,602 science and engineering Ph.D. degrees granted that year outside of social sciences, American Indians received 21, Blacks 144 and Hispanics 147 (National Science Foundation,1988, Table 51, pp. 211-13).

The preparation of minorities is severely deficient in mathematics and science and appears to worsen for Hispanic and Black students as they move through school. This typically leads to recurrent failure, followed by finally dropping out. Studies of dropout characteristics of minority students indicate that as many as 25 percent will leave school by the ninth grade. Approximately 60 percent of Black and less than 50 percent of Hispanic students finish high school in disadvantaged urban areas (Texas Alliance for Minorities in Engineering, 1987, p. 20).

Thus, well before reaching middle-school and high-school programs which popularly promote gifted and talented or college preparatory projects in mathematics and science, a significant proportion of minority students already will have opted out (or been pushed out) of the school system. Of those who persist, the majority are already tracked by ability grouping—some as early as kindergarten—and categorized as unable to learn or perform. Educational policy has been to divert minorities from academic math and science into nonacademic, vocational/technical courses suited for occupational training.

Damaging policies such as these underscore the importance of early targeted interventions at the elementary and preschool levels. The quality of elementary school instruction is crucial in determining whether minority students will be encouraged to pursue further studies in science and mathematics. Waiting to concentrate interventions at the middle and high-school level may well be too late. Indeed, exposure of minority students to successful math and science learning as early as possible is imperative to the goal of extensive or long-term advancement in mathematics and science careers.

Factors Affecting the Performance of Minority Students in Science and Mathematics

The 1986 NAEP assessments found that Hispanic and Black students of 9, 13, and 17 years of age were at least four years behind their White peers in achievement. Only small percentages could demonstrate successful problem-solving skills, analyze scientific procedures and data, or integrate specialized scientific information. These performance deficiencies might well be tied to their having experienced science or mathematics as intimidating, complicated, or unconnected to their immediate lives. Incongruously, surveys indicate that students do not see science or mathematics as able to help them earn a living. Less than half envisioned having a job requiring the use of these fields, despite the fact that between 1995 and 2000, 75 percent of the jobs will require math.

Performance data for minority students in reading skills and mathematics and science have confirmed that learning problems occur quite early and intensify over time. In an NAEP assessment of reading achievement, significant differences were found among racial and ethnic cohorts in levels of comprehension. These results can be particularly suggestive of performance outcomes of minorities, since they reveal that learning problems may be more complex than those merely associated with teaching mathematics and science alone. At age 9, mean reading scores between Whites and Blacks differed by approximately 12 points and between Whites and Hispanics by about 7 points. By age 13, the disparity between Whites and Blacks increased to 28 points and to 24 points for Hispanics. By age 17, the mean differential increased to 31 points between Whites and Blacks and 25 points between Whites and Hispanics. Analysts point out that these disparities might well have been greater if the sample had included assessments of those minority students who had already dropped out of school (NAEP, 1988).

Not surprisingly, the data confirm that Blacks and Hispanics are already critically behind

Whites in performance at age 9. In evaluating test data on higher cognitive levels of comprehension and interpretation at that age, Whites are 5 times as likely as Blacks and Hispanics to demonstrate "ability to search for specific information, interrelate ideas, and make generalizations (intermediate level)." Similarly, at age 13, Whites are five times as likely as minority students to perform at the adept level (i.e., the ability to find, understand, summarize, and explain relatively complicated information). Reading performance at minimum college level standards requires reading skills at the adept level. However, only 15.5 percent of the Black and 19.9 of the Hispanic 17-year-olds demonstrated this proficiency.

In the High School and Beyond battery of achievement tests in math, science, reading, and social studies for 1980 seniors, only 8 percent of Black and Hispanic students were ranked as high achievers, notwithstanding socioeconomic (SES) background. By contrast, 46 percent of Whites classified in the high SES group and 24 percent of the low SES Whites were classified as high achievers. Within students aged 9, only 4.7 percent of Hispanics and 4.5 percent of Blacks scored in the intermediate range, as compared to 22 percent of the Whites.

Explanations for the poor performance of minorities range over a wide variety of factors—economic determinants, cultural divergence, school climate, type of education received, and minority attitudes towards education and achievement. Whatever the order or combination of explanatory factors, unquestionably the educational performance of minority students often reflects both the structural features of their educational environment and the corresponding quality of their learning experiences.

Predominantly, minority students live in poor, urban areas that have "reached a stage of deterioration and failure beyond comparison with the rest" ("School Practices . . . ," 1988, p. 3). Schools are typically a microcosm of their communities, which means they are racially, ethnically, and economically isolated. While only 6 to 8 percent of White students go to schools with 50 percent or more minority student enrollment, a third to over half—depending on grade level—of minority students attend essentially minority schools.

These resource-poor schools are more likely to exhibit numerous problems detrimental to learning—high student absenteeism, low academic standards, discipline problems, absence of motivation, presumed lack of outward parental interest, and inadequate school budgets. Few such schools can offer a complete range of college-preparatory mathematics and science courses. Studies conducted over the last several years show that course offerings in science and mathematics not only vary widely in such urban, disadvantaged areas, but nationally as well. Although 81 percent of high schools offer at least one year of physics, only 31 percent offer calculus. Even when such courses are offered, enrollments are very low. A 1982 survey of high-school graduates (cited as the best available data on the courses that students actually take) indicated that even when calculus was available, less than 12 percent of students took the course. Similarly, less than 20 percent took physics courses (OTA, December 1988, p. 29). In 1982, only 24 percent of high school graduates had taken chemistry; 11 percent, physics; 7 percent, trigonometry; and 6 percent, calculus. If these small numbers represent national percentages, it is not difficult to imagine the meager participation of minority students.

Teachers also pose critical problems. Most schools have difficulty finding high-quality teachers, especially for subjects such as physics. Minority teachers are even more difficult to recruit and retain. Teacher shortages are such that urban schools would need to increase the number of Black teachers by 66 percent and Hispanic teachers by more than 500 percent to match the proportion of minority students currently in pubic schools ("Teachers Can Improve Success Rate in Urban Schools, Districts Say," 1988, p. 2).

Both teacher and student expectations are typically low and tend to reinforce a pattern of apathy and failure. Even in integrated settings, ethnographic studies discussed below indicate teachers give minority students less stimulating materials and make fewer academic demands of them. Accordingly, they are less likely to take college-bound courses or develop higher-order problem-solving or reasoning skills. Exposed to tedious and largely irrelevant drill and practice patterns as their primary interaction with teachers and science and mathematics course content, inner-city minority students are likely to develop defensive, self-fulfilling failure mechanisms. Segregated to a lower status in the class, they soon learn to categorize teacher and subject matter alike as adverse or threatening to their ethnic/racial solidarity and self-esteem. These protective reactions form early in elementary school and continue through the middle/junior-high years and beyond (Texas Alliance for Minorities in Engineering, 1987, p. 33).

Experiences such as these underscore the ways in which children learn and perceive the value of education. Although research affirms that certain groups of students, such as minorities and women, learn in modes different from that defined as the norm (i.e., the way White, middle-class males learn), too many classroom teachers are unable or unwilling to respond to variations in students' learning abilities or experiences. Instead, such students are regularly turned over to remediation programs or vocational/technical curricula in which they are taught a different, less-demanding curriculum. They are further stigmatized, moreover, by being taken out of a regular class where they can experience success if appropriate help is made available.

Students whose first language is not English or is a nonstandard Black dialect, face difficulty understanding not only the words used to teach mathematics and science, but also the cultural relevance of the curriculum materials. Where available, a bilingual curriculum has not been able, for the most part, to make a difference in academic courses such as mathematics and science, since it has been limited to the most basic subjects. Students are rarely given the opportunity to learn science and mathematics in the language most familiar to them. Several studies have demonstrated that bilingual students have more difficulty than their English-speaking counterparts in solving mathematics problems requiring semantics processing ("Teaching Science and . . . ," 1987). Other cultural differences, involving variations in the ways minority students are expected to behave at home and at school (e.g., sitting quietly in one's seat and engaging in competitive behaviors) have also been identified as factors which are equally inhibiting to successful learning by minority students.

Effects of the Deficit-Based Model of Remediation

Persistently inadequate performance by minorities in mathematics, sciences, and other basic skills areas has tended to reinforce among educators the popular deficit-based model of remedial instruction. This self-fulfilling concept attributes shortcomings in the minority students' achievement levels to deficiencies inherent in the socioeconomic status and ethnicity of the child, rather than to inadequacies in the education system or prevailing instructional methods. At the same time, remedial educational strategies have paradoxically introduced academic deficits in the child's impoverished educational background through the use of tracking, ability grouping, and less demanding curriculum.

The deficit/remediation model relies heavily on testing as the single, unidimensional measurement of minority student performance. IQ and other standardized test data have been established as the criteria for assessment of all students. Such testing practices serve to legitimize the practices of ability grouping and tracking. The result for minority and disadvantaged students who lack test-taking skills has been to become rigidly segregated by ability and motivation rankings and ethnic and racial associations. Minority children are regularly assigned to low-ability groups in which their academic mobility is impeded by restricted access to academic preparatory courses.

Ironically, the remedial instructional program replicates the very disparaging characteristics (cognitive and emotional) of the formalistic, rule-bound classroom. First, it leads minority children to acquiesce to the categories which describe them basically as nonlearners. Learning becomes essentially a matter of uncritically absorbing and parroting data needed to supply the correct answer successfully and thus pass the required test. Repeated drill-and-practice methodologies attempt to imprint knowledge into the child's consciousness by rote. The goal is the memorization of discrete facts. In the process, important educational goals are ignored (e.g., developing higher-order thinking skills) as indeed are problems that may be restraining cognitive functioning (e.g., acute linguistic difficulties, the effects on science and mathematics learning produced by distinctive economic and cultural contexts, or the effects of teacher expectations and behavior on children's cognitive processes and problem-solving skills).

In the final analysis, remediation has the administrative advantage of being able to demonstrate structure and discipline. It reflects a classroom management and tracking system which rationalizes its meager educational attainment relative to monies spent by reliance on the orthodoxy of tracking procedures and sanctioned testing conventions. Students who fail remediation or drop out, in effect, confirm they are beyond the hope of the system. Remediation, the deficit model, and the "at risk" doctrine share a common tacit view of the minority child as somehow innately substandard or distinct from other children in terms of their helpless inability to learn. The unstated, exclusive standard of learning, of cognitive development, by which they are judged is that which is specific to the White, middle-class child. To whatever degree minority children deviate from this standard, behaviorally, emotionally, or cognitively, they are seen as deficient or at-risk. The specific deficit is often likely to be viewed as a permanent handicap, frequently mental, and the child treated as retarded or unteachable. Yet, many recent studies indicate that minority children are not deficient in their ability to learn and can outperform their White counterparts, once they are provided with appropriate curriculum and teaching methodology.

Teacher Preparation and Expectations

Perhaps the most frequently cited problem affecting the quality of mathematics and science education has been the inadequate preparation of its teachers, especially at the elementary level. According to a 1985-86 National Survey of Science and Mathematics Education, only about 40 percent of elementary mathematics teachers had taken at least one college-level mathematics class. The common practice was to take mathematics courses especially designed for elementary mathematics teachers (OTA, December 1988, p. 65).

Teacher shortages, especially within urban, inner-city school districts, have commonly led schools to utilize teachers who lack appropriate preparation in either science or mathematics. Consequently, they are often intimidated and therefore resist teaching these subjects. When required to do so, they tend to rely heavily on the textbook. In so doing, they convey to the elementary student their sense of misgivings and anxiety, and they tend to reinforce or displace a feeling of aversion and fear of the complexity of the subject matter, particularly among female and minority students.

National surveys of teachers of mathematics and science confirm that relatively large numbers are not certified to teach in the fields to which they were assigned. The proportion of noncertified teachers is particularly high in science and mathematics. In 1986, a survey of 39 states (enrolling 28 percent of the student population) estimated that between 6 and 15 percent of all science teachers were uncertified for the fields they taught. Biology had the lowest proportion of undercertified teachers, while earth and general science had the highest. About 8 percent of mathematics teachers were uncertified (OTA, December 1988, p. 61). Among all secondary teachers, only 3.3 percent lacked field certification for their teaching, compared with 4.1 percent of all science and mathematics teachers.

Teacher Expectations and Student Achievement

Finally, in addition to programs designed to overcome shortcomings in teacher preparation, extensive research has established that the attitudes and expectations of teachers and the ways in which they interact with students can significantly shape student achievement and behavior. These studies, while not specifically based on behavior related to learning science and mathematics, have important implications for the performance of minorities and females in these subjects. For example, research has revealed that when teachers interact with students whom they perceive as low achievers, they do so in less motivating and less supportive ways than when they interact with students perceived as high achievers. Not surprisingly, high achievers get more opportunities to respond and participate in the classroom and are given more time to answer questions. When they do have difficulty, teachers tend to help them, furnishing clues or rephrasing the question. Low achievers are seldom given the same assistance. Instead, they are routinely allowed to experience themselves as helpless failures, despite the fact that research has demonstrated a self-fulfilling prophesy effect. The best way to improve the performance of underachieving students is to raise requirements, not to lower them (Levine, 1988).

Research also indicates that teachers' expectations of students' performance vary as a function of their race or ethnicity. Again, teachers more often expect achievement-oriented behaviors in White students and reinforce those behaviors more often than they do with minority students. Teachers tend to attribute the achievement-oriented behaviors of White students to effort or motivation, while they attribute the achievement-oriented behaviors of Black students to factors that students cannot control, such as parental encouragement or heredity. Consequently, teachers are more likely to praise White students and give them more attention. Moreover, they have higher performance standards for White students than for minority students. Even when minority students have been labeled as gifted, they tend to get more criticism than similarly labeled Whites. In short, minority students are denied the same degree of intellectual encouragement given to their White counterparts.

Ethnographic studies of minority children at the elementary level reveal that they approach the teacher only when necessary. These contacts tend to be brief, task-oriented and usually made on behalf of a peer. Black male students have the fewest contacts with teachers. In general, teachers tend to interact more frequently and for a longer period of time with White children and are more likely to talk to them about both personal and school-related matters. In another study asking for hypothetical responses to student misconduct, teachers routinely assigned less severe punishments to White than Black students. Researcher Valora Washington found that both Black teachers and White teachers evaluated White girls more positively than they evaluated Black girls or boys of either race. A follow-up by Diane Pollard found that teachers rated White females higher than White males or Blacks of either sex in the areas of responsibility, compliance, persistence, performance/ability, and relations with peers and teachers (Kerman, 1976, p. 525).

Given this broad evidence of low teacher expectation of minority performance and a concomitant, self-fulfilling prophesy of low achievement by minority students in science and mathematics, it is easy to understand why teachers have tended to track minority students away from academic courses toward the vocationally oriented or "general mathematics" curriculum. Accepting established policies, teachers have considered these courses better suited to the abilities and types of employment probably most available in the job market to minority students. Lack of available minority role models in technical fields has additionally functioned to validate these self-fulfilling theories both in the minds of teachers and students. At the same time, such circular reasoning and invidious patterns of low expectations have reinforced minority students' beliefs that dropping out is appropriate. After all, their chances to succeed are virtually insurmountable when so few other minority persons have done so in the past.

REMEDIES AND SOLUTIONS

Federal Programs Influencing Science and Mathematics Education

In the early 1980s, growing concern about the deficiencies in science and mathematics teaching led to the development of Title II of the Education for Economic Security Act (EESA). Designed to correct immediate instructional deficiencies and to improve the quality of instruction in teaching mathematics, science, computer science, and foreign languages across the United States, Title II finances preservice and inservice retraining of current teachers (K through 12) in all fifty states. Thirty percent of the funding for the EESA Program is earmarked for higher education support of science and mathematics. Reeducation activities are provided by university faculty from education, science, and mathematics schools or departments.

During the first two years of the program, approximately 120,000 teachers and 70,000 students nationwide directly participated in Title II-supported higher education projects. New partnerships have been forged between institutions of higher education and local education agencies in an effort to improve the quality of science and mathematics education. One of Title II's more immediate benefits has been its stimulation of collaboration and cooperation among the various entities involved in teacher education—institutions of higher education, local education agencies, state education agencies, state agencies for higher education, and the private sector. Projects funded under the program have also reached out to include teachers from private as well as public schools. Significantly, funding has increased access to instruction in mathematics and science for minority groups. Over 20 percent of all projects were characterized as exemplary in this regard. Approximately 30 percent of teacher participants were from minority groups.

Programs to improve the quality of mathematics and science instruction and to enhance teacher effectiveness have also been sponsored by the National Science Foundation (NSF). NSF seeks to generate new ideas for teachers to implement; to leverage its funding through states, school districts, and foundations; and to do research on mathematics and science education. Between 1954 and 1974, NSF spent a total of over $500 million on teacher training institutes, most of them for secondary school teachers. Most were full-time summer programs, others were part-time after school, and others were full-time academic year programs. These institutes aimed to improve the mathematical and scientific knowledge of teachers, but the effectiveness of the institutes has been debated. No direct relationship has been established between teachers' knowledge, their effectiveness as teachers, and educational outcomes measures such as students' achievement test scores. Teachers need some knowledge of mathematics and science as well as practical pedagogical skills to be effective (OTA, December 1988, p. 120).

Preservice Training

Despite the continuing debate over how best to improve precollege mathematics and science education, there is no widely accepted model of how new elementary mathematics and science teachers should be prepared. Merely requiring them to take more courses for certification has not proved to be an automatic panacea, particularly given the uneven quality of these courses. Higher education science and mathematics departments invariably prepare their students to become scientists or engineers, not teachers of these subjects. Few, if any, courses are offered that give prospective teachers a strong preparation in the subjects. Neither are they given a functional notion of what scientists do and how science and mathematics affect workday activities and everyday problems. Prospective mathematics and science teachers have had little choice but to model the attitudes and teaching practices of their college professors or previous school teachers. They naturally reiterate the techniques of lecturing and rote memorization to which they themselves were subjected as students (OTA, December 1988, p. 68). One may wonder, then, whether teachers can be blamed for being prepared inadequately in appropriate content or for not using integrated, discovery-based methods in their classrooms. They simply never experienced such methods as students and prospective teachers. Boring textbooks, curriculum guides, and rote testing patterns have made it easy for the teacher to rely on covering concepts and facts, one by one, without much attention to linkages. What is even more discouraging, "teaching to the test" has become excessively emphasized in many schools at the expense of broader educational objectives and instructional strategies (OTA, June 1988, p. 98).

Nevertheless, the problem of adequate and more specialized preservice mathematics and science education cannot be ignored. Presently, among elementary teachers who have earned baccalaureate degrees in education, 97 percent of the mathematics teachers and 95 percent of the science teachers have a degree in subjects other than mathematics or science education (OTA, December 1988, p. 68). Such circumstances led the Holmes Group to argue for elementary teachers acquiring a baccalaureate degree in a specific subject area, rather than a general educational degree. They advocate that teachers engage in more subject-specific teaching and undergo more subject-intensive preparation. The National Research Council similarly argues that "It is time we identify a cadre of teachers with special interests in mathematics and science who would be well prepared to teach young children both mathematics and science . . . " (National Research Council, 1989, p. 65).

Intervention Programs

Despite the complexity of the problems that beset mathematics and science education, especially at the K through 6 level, various nontraditional programs have emerged that demonstrate the ability to improve the preparation of elementary school teachers in mathematics and science. The goals of these interventions are not simply to enrich the educational experience for talented students. Their broader purpose is to improve the capabilities of elementary teachers to instruct students traditionally underserved or previously labeled unteachable.

A study by the American Association for the Advancement of Science shows that model intervention programs provide encouragement and opportunities for teachers to reach beyond the constraints of textbook-bound curricula to integrate innovative research on teaching and learning. For minority students, hands-on, activity-based programs using manipulatives, fostering peer interaction and cooperative learning, and promoting guided inquiry have provided results that demonstrate greater benefits in achievement, understanding, and growth in language and logic (Bredderman, 1982, pp. 68-75). The average student in hands-on, activity-based programs such as those fostered by the National Science Foundation—the Elementary Science Study (ESS), Science Curriculum Improvement Study (SCIS) or Science: A Process Approach (SAPA)—performed better than 62 percent of the students in traditional classrooms across all performance criteria measured. Many other creative science and mathematics intervention programs have experienced similar results. Although it is not feasible to identify and describe each of them in this chapter, their essential characteristics will be outlined below.

Characteristics of model interventions. Successful K through 6 model teacher preparation and enhancement programs share several characteristics and strategies. They emphasize making teachers more competent in mathematics or science content. Simultaneously, these programs seek to make teachers more comfortable in the presentation of such subject matter. The objective is to help the teacher understand and become more seriously committed to improving student participation and performance. The programs aim to assure that the learning needs of minority and female students are not slighted by teacher partiality or low expectations about their performance or that students do not become alienated from school due to traditional rote teaching. The various programs train teachers to model the special knowledge, expectations, teaching methods, and contextual (cultural and linguistics) understanding that will promote more effective learning by these students.

As early as feasible in the elementary school experience (research indicates interventions should occur no later than the third grade), minority groups and female students are targeted for special interventions. Program emphasis is on enrichment, rather than remediation or watered-down curriculum. Effective projects seek both to broaden the teacher's knowledge and utilize teaching methods that raise the students' expectations of themselves. Through continual positive reinforcements, minority students in particular become more confident and more willing to take risks. They cease to see themselves as incompetent or ignorant. By recognizing each student equally and encouraging comparable participation, the teacher can keep minority students involved, interacting with other members of the class, and part of a communal process of problem solving.

Learning results from and emphasizes interesting activities relevant to the students' lives, stressing information and events with which they are familiar. Most science and mathematics courses have deservedly been criticized for their lack of meaning to students and relevance to the world outside the classroom. The science curriculum at the elementary level is too often a reading assignment for the student, rather than active participation and experience in the application of science concepts and skills. Enhancement programs provide a curriculum that gives students more opportunities to identify with the subject matter by exploring problems and processing information. The focus is on solving problems, formulating options, and making meaningful decisions on individual and real-world concerns.

Activity-based programs. Handling physical objects, doing laboratory experiments, exploring things in the field, and asking questions about what they see give students a chance to develop generalized skills in observing, measuring, calculating, and experimenting. Laboratory work is particularly valuable for teaching manipulative skills and increasing understanding of the particular apparatus used. Students not only have the opportunity to engage directly in designing experiments, but also developing skills in scientific method and fostering certain problem-solving abilities. In contrast to the passive learning and memorization that characterizes science classes today, activity-based programs engross the students in the "doing" of science and mathematics. They convey a sense of their utility by attempting to engage students in more active learning roles.

Mathematics is not simply taught as adding, subtracting, multiplying, and dividing. Model programs stress problem solving as a process. This means teaching the minority student the ability to discern when to add, subtract, multiply, or divide, as well as the value of knowing how. Instead of just filling in sheets of homework drill, the student sees how to use mathematic problem-solving strategies creatively and apply new skills in practical situations. Hands-on experiences provide minority students with opportunity for developing process abilities not naturally available to them in their home environments or everyday experiences, as is frequently the case with more advantaged students. Hands-on experiences demonstrate the immediate relevancy and value of knowing mathematics and scientific concepts and how these fields may be related to the real possibility of preparing for a career. Learning involves more than moving numbers around. Students are taught from the start how to organize information and solve problems (which can be as simple as the math required for household budgeting), skills valuable not only to mathematics and science, but also to social sciences, languages, and the arts. The emphasis is on developing understanding and applying mathematical ideas and scientific methods, rather than on rote mastery of procedural skills, which no longer have significant value in themselves.

Informal, out-of-school teaching methods are equally important as a means to awaken minority students to experiences immediate (but often unknown) to their learning environment. For minority children in particular the concrete, sensory experiences of events and circumstances within their own worlds can be superior to traditional classroom discussions based on books and lectures (Martinello, 1988, p. 2). Principal examples of such experiences are science field trips to museums, zoos, botanical gardens, or aquariums which provide the teacher with an opportunity to visually link the science curriculum to well-designed exhibits. These instructional opportunities can encourage the student to identify, categorize, and assess empirical phenomena; make inferences that motivate inquiry; and actually attempt primary source research (Martinello, 1988, p. 2). Minority students can be given the opportunity to work in more comfortable cooperative groupings or project teams without the specter of failure. Research projects provide an excellent opportunity for students to develop and use multiple skills, integrating the knowledge they have already gained and stimulating them to independent effort.

For minority students to learn effectively, they must not only understand the material presented, but also be able to relate it to their own lives. Thus, enhancement programs have become aware of the need to structure curriculum to take into account students' cognitive differences—to create learning tasks that can be mastered through use of the students' innate ways of understanding information. Making this sort of personal connection for the minority student requires that the curricula take into account his or her particular cultural and ethnic diversity and that teachers have appropriate knowledge and ability to utilize it in motivating minority student performance.

Integrating the support and participation of parents has been found to be equally crucial in helping the minority child to obtain a firm foundation in mathematics and science. Often, however, minority parents possess neither the knowledge nor positive experience with mathematics and science commonly found among parents of advantaged children. Helping minority parents to provide their children with motivation in building mathematics and science competency is pivotal to model intervention programs. One of the activities teachers can be trained to organize is that of family math and science classes for local parents and children in schools, churches, and community centers. Since a child's earliest feelings and interest in mathematics and science are formed in elementary school, accessible, engaging activities can be designed to favorably change attitudes held by both parents and students. Expectations must be raised and reinforced about the ability of all to learn and understand mathematics and science concepts. Geometry, probability, statistics, estimation, logical thinking, and modern technology are incorporated into everyday learning activities that demonstrate the relevancy of mathematics and reinforce the science and mathematics lessons and principles that children are learning in school. Finally, building a partnership between school and home encourages minority children to stick with and understand the personal utility of mathematics and science. It provides youngsters with a keener awareness of the effect of these subjects on their everyday lives and ultimately how they can open doors to tomorrow's careers.

Limitations to activity-based interventions. In a recent survey of teachers who report using "hands-on" learning, about 80 percent of the mathematics respondents and 60 percent of those in science indicated that among the more discouraging limitations was a lack of time for planning, organizing, and gathering materials. "Teachers with the most problems were in schools where hands-on materials were just given to them without any training." Insufficient materials and finances were also identified as impediments to program effectiveness ("Hands-On Math and Science Faces Obstacle, Survey Says," 1989, pp. 1-2).

Eighty-two percent of the teachers who responded to the survey were elementary school teachers. The study noted that these teachers particularly need sufficient time and institutional support (three to five years) to wean themselves from textbooks, since they are routinely uncomfortable teaching science and math. Lack of established assessment instruments also tends to create difficulties in determining a more active learning approach.

> It's hard for teachers to evaluate hands-on work because there's no way to use traditional pencil and paper tests provided with textbooks. Assessment is based largely on teacher observation of what students do to see if they understand mathematics and science concepts ("Hands-On Math and Science Faces Obstacle, Survey Says," 1989, p. 2).

Activity-based programs, the survey concluded, can be most successful in schools with appropriate levels of commitment. Success requires in-service teacher training; sufficient quantity and range of classroom materials; and support from other teachers, administrators, and consultants. Although costly and time consuming, the survey confirmed that good hands-on programs were considered "well worth it" ("Hands-On Math and Science Faces Obstacles, Survey Says," 1989, pp. 1-2).

CONCLUSIONS

Although they vary in quality, length, and base of operation, sources of support, and goals and objectives, interventions to improve the preparation and teaching practices of science and mathematics teachers have demonstrated that there are no inherent barriers to successful student achievement. Evidence gathered to date indicates that if minorities and disadvantaged students are provided early, excellent, and sustained hands-on, activity-based instruction in these academic areas, their achievement levels will rise significantly. Indeed, they can parallel those of White males.

From an educational perspective, what has been learned repeatedly is that variability in performance and achievement among racial and ethnic groups requires that adaptations be made that are sensitive to learners. These adaptations involve activities such as (1) modifying teacher behaviors that convey prejudicial attitudes and messages to children about their self-worth and likelihood of achievement; (2) identifying relevant contextual factors (cultural and ethnic values and patterns) that facilitate learning; (3) strengthening awareness of research on primary language learning influences; and (4) promoting greater parental involvement. Effective intervention programs of this scope can be developed that integrate research and practice regarding both cognitive and affective dimensions to facilitate minority student learning and motivate them to higher levels of achievement in mathematics and science. These programs can also be successfully disseminated. By demonstrating the ability to raise minority attainment to levels comparable to those of their White counterparts, these new approaches offer school districts immediate incentives and benefits.

From the perspective of public policy, educational and governmental leaders must be able to see beyond conventional, narrow notions of remediation or gifted and talented programs. They must understand the long-term benefits, both for society as a whole, as well as for minority students in particular, that are inherent in funding and expanding academic interventions in mathematics and science. These policies and programs must be implemented at the earliest possible stage in the preschool or elementary school experience. Otherwise, it becomes increasingly difficult for the educational system to surmount the institutionalization of structural and attitudinal obstacles which steadily accumulate and lead minority students to drop out or, more likely, accept being pushed out of the system. Policies at the local, state, and federal levels must focus on programs that have the broadest possible effect on minority student achievement in mathematics and science. This is especially imperative if the nation is to prepare a well trained and educated workforce able to address the complex technological and scientific demands of competing in the global market place. A strong policy of educational equity and excellence will serve to advance the nation's technological economy and help preserve its democracy.

Chapter 6. Assessment and Referral of Hispanic Bilingual Special Education Students: A Growing Controversy

by

Clark C. Talkington*

INTRODUCTION

Concern has been growing in recent years as more studies indicate that minority students are being inappropriately placed in special education programs. The definition of *learning disabled* (LD) is vague and is the source of much conceptual confusion. According to Cummins, critics of the LD category argue convincingly "that if the construct of 'learning disabled' cannot be defined, it cannot possibly be identified and remediated" (1984, p. 80). Fourteen years after the passage of Public Law 94-142 and 24 years after passage of the Civil Rights Act, Blacks are disproportionately placed in programs for the Educably Mentally Retarded and Hispanics are disproportionately placed in Learning Disabled programs.

During the first half of this century, the mentally and physically handicapped were educated in private schools, state schools, or were simply ignored because their contribution was believed to be minimal at best. Through litigation, congressional action, and attempts by some states and local school districts to improve special education, handicapped children began slowly to be brought into the mainstream of education. Although these efforts to implement special education were successful in many cases, there was still no cohesive federal plan to provide all handicapped children with an education until November 29, 1975 when Congress passed P. L. 94-142, the Education for All Handicapped Children Act, amending Part B of the Education of the Handicapped Act (EHA).

THE EDUCATION FOR ALL HANDICAPPED CHILDREN ACT (P. L. 94-142)

Because of its sweeping nature, the new law was immediately hailed as a "Handicapped Bill of Rights." The act clearly signaled congressional intention to expand the federal government's commitment to help state and local education agencies to provide services for the mentally and physically disabled (U.S. Department of Education, 1980, p. 11). Congress established four purposes in the Education for All Handicapped Children Act: (1) to assure that all handicapped children receive a free appropriate public education; (2) to assure that the rights of handicapped children and their parents or guardians are protected; (3) to assist states and localities in providing for the education of all handicapped children; and (4) to assess and assure the effectiveness of efforts to educate handicapped children (U.S. Department of Education, 1985, preface).

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Implementation of the four purposes presented a huge task that would require excellent coordination among agencies at all levels of government, considerable oversight by Congress, and the cooperation of the special interest groups that had been instrumental in the formation of the law. Whereas the formulation of the bill that eventually became P. L. 94-142 was an excellent study in pluralism, the implementation of that law has been an excellent study in federalism. Singer and Butler noted that "even before it was implemented, EHA promised to be a fascinating case study of federal efforts to influence state and local educational practice" (Singer and Butler, 1987, p. 3).

Three key provisions were established in the act to insure that all handicapped children receive a "free appropriate" public education. First, a system of funding was established that would enable local school districts to provide adequate services to properly educate handicapped youths. The second provision was the designation of the Least Restrictive Environment (LRE), commonly known as "mainstreaming," as the educational environment necessary to achieve appropriate special education. The Individualized Education Program (IEP) was the third key provision. These three provisions are interesting because even though they represent various interests, each one is specifically targeted at meeting the needs of individual participants. State and local education agencies are the obvious targets of the funding system. The student is the prime beneficiary of the LRE, and the IEPs are designed for the students but are used as a form of oversight by the federal government.

The system of funding described by the act is known as the EHA-B State Grant program and is the "fuel" that allows the provisions of the act to be implemented. As with any entitlement program, funding begins with appropriations granted by Congress to a federal agency, in this case the Bureau of Education for the Handicapped in the Department of Education. The bureau transfers funds on a specified allocation formula to the state education agency, which then conveys a specified percentage of the funds to local education agencies (LEAs). Under the law, the allocation formula to states is based on the number of handicapped children, ages 3 through 21, receiving special education and related services. This number is multiplied by a specified percentage of the average per pupil expenditure in public elementary and secondary schools in the U.S. (U.S. Department of Education, 1980, p. 11). For fiscal year 1978, 50 percent of the state allotment had to be passed on to the local education agencies. Beginning in 1979, 75 percent of federal funds received by the state education agency had to be distributed to the LEAs (U.S. Department of Education, 1980, p.12).

Congress realized that it would be difficult for school districts to provide appropriate educational and related services for handicapped students without proper funding, yet it also recognized its own inabilities to immediately appropriate the necessary funds. Thus, the act provided for an increasing level of funding through 1982, at which time federal funding was to reach an established level. Beginning with 5 percent of average per pupil expenditure (APPE) in FY 1978 and graduating to 40 percent of APPE in FY 1982, these funds were to help cover the cost of educating each handicapped child (U.S. Department of Education, 1980, p. 11). Unfortunately, the federal government only met its promised level of funding in the first two years of the program, FY 1978 and FY 1979. The actual level of funding has never exceeded 12.5 percent, far short of the APPE maximum of 40 percent (U.S. Congress, 1986d, p. 98). This shortage is a result of the desire to decrease government spending by the present administration. It is important to note that although P. L. 94-142 funds have never been cut, the yearly increases in appropriations have been small.

Congress included the requirement for a Least Restrictive Environment (LRE) to encourage movement toward integrating handicapped students with nonhandicapped students in the public schools. Largely a result of the influence of special interest groups, the LRE has been an effective instrument at the local level. LEAs have had to expand their special education departments substantially to accommodate the requirements of the Least Restrictive Environment provision. Often a source of pride and integrity in the local districts, the LRE requirement has also become the target for some of the complaints of P. L. 94-142.

The third requirement of P. L. 94-142 is the Individualized Education Program (IEP). Because of the unique needs of each special education student, IEPs are developed for each student. Obviously the IEP benefits each special education student, and most educators would probably agree that they are necessary for a proper education. However, the IEPs perform another function, oversight. State education agencies are required to review IEPs and submit their findings to the Bureau of Education for the Handicapped. IEPs have also been an area of great discussion because of the huge paper trails they create.

P. L. 94-142 has been effective in raising the consciousness of the handicapped and has favorably influenced the education of mentally, physically, and learning disabled youth in the United States. However, some groups inadvertently have been affected negatively. As a result, the focus of the Bureau of Education for the Handicapped has shifted from the implementation of the law to the effects on those the law was intended to benefit, the students. The foreword of the *Seventh Annual Report to Congress on the Implementation of EHA* states, "This report continues to portray the shift in emphasis from procedures to quality, which was first evident in the *Sixth Annual Report to Congress*. The data presented in this report demonstrates (sic) that the States have successfully implemented the procedural features of the Act" (U.S. Department of Education, 1985, Foreword).

The Education for All Handicapped Children Act has received both acclaim and criticism. Money has been limited, but regulations have been extensive. President Ford reluctantly signed the bill noting that the measure promised more than it could deliver and with the understanding that the law would not be fully implemented until 1978. In addition to funding problems, state and local educators have complained of the massive amount of paperwork involved in meeting the regulations.

SPECIAL EDUCATION AND THE HISPANIC STUDENT

The problems existing for Hispanic students in the education pipeline have only recently captured the attention of education researchers. The Hispanic population in the United States grew 16 percent from 1980 to 1985 compared with a growth rate of 3.3 percent in the general population. Today, the Hispanic population makes up 12 percent of the population, and rapid increases are expected to result in growth to 19 percent of the total population by 2080 (Yates, 1986, p. 1). The composition of public school enrollments already has begun to show dramatic change. In 1986, 51 percent of Texas kindergarten students were Hispanic (Yates, 1986, p. 1).

The education system faces special problems as a result of these growing numbers of students. Various studies have concluded that school dropout rates for Mexican-Americans is as high as 66 percent (Ortiz and Garcia, 1986). The Department of Education in *High School and Beyond* found that 27.1 percent of Hispanics in the sophomore class of 1980 dropped out of school and only 30.3 percent of those who had dropped out had received their high school diploma by 1984. Whites, in comparison, had much lower dropout rates. The dropout rate for Whites in the sophomore class of 1980 was 13.7 percent; 41.4 percent of them returned to receive their high school diplomas (U.S. Department of Education, 1987, p. 28).

It is clear that Hispanic students are having difficulties in our educational system. Hispanics have traditionally scored two to three years below grade level on standardized achievement tests in areas such as reading, math, and science (Garcia and Ortiz, 1986, p. 6). According to a 1981 General Accounting Office study, 74 percent of Hispanic students in special education programs in 1978 were classified as learning disabled (44 percent) and speech/language impaired (30 percent) (as cited in Ortiz and Polyzoi, 1986, p. 33). Ortiz and Yates (1983) found overrepresentation in learning-disabled programs but under-representation in speech/language-impaired programs due to a lack of guidelines to properly assess students and implement effective procedural safeguards.

According to the National Center for Education Statistics, Hispanic students are more likely than Whites and equally as likely as Blacks to be designated as learning disabled (U.S. Department of Education, 1987, p. 66). Hispanic participation in Specific Learning Disabled programs in 1984 was 4.5 percent as a proportion of their school-age population compared with a White proportion of 4.2 percent.

Hispanic students in general and bilingual special education students specifically clearly face mounting obstacles in obtaining the free appropriate public education promised to all handicapped students in the United States. Students placed into bilingual special education programs become members of two minority groups, compounding their problems. In addition to being Hispanic and disabled, they reside in a country that does not speak their primary language, in essence a third handicap. Unfortunately, the majority of studies concentrating on the problems of these students have only begun to appear in the last decade, but the realization of the many problems facing these students is resulting in the implementation of model programs and institutes, such as the Handicapped Minority Research Institute on Language Proficiency in the College of Education at The University of Texas at Austin.

ASSESSMENT AND EVALUATION

Our society has had a fascination with IQ tests, tests which ultimately fail to measure more than what has been learned. "The basic assumption of the IQ test is that previous learning of academically relevant knowledge and skills is a good index of future rate of learning in school (i.e., "academic potential"). Thus, the test attempts to sample from the range of (what is assumed to be) academically relevant knowledge and skills to which children of different ages in the population have generally been exposed" (Cummins, 1984, p. 69). Researchers as far back as George Sanchez in 1934 have pointed out the inherent biases in IQ tests (Cummins, 1984, p. 67). An Anglo-centric instrument, the IQ test fails to recognize the linguistic and social differences that exist among a non-homogeneous population. The BITCH-100 (Black Intelligence Test of Cultural Homogeneity) developed by Williams in the mid-1970s further illustrates this point. The test, consisting of 100 words selected from the Dictionary of Afro-American Slang, was given to both White and Black students. Black students scored much higher than White students (an average of 36 points) indicating that White students had less opportunity to learn the test content than the Black students. The results can be compared to the results of a normal IQ test constructed under the assumption that most students taking the test would be White and probably middle class. In addition, Cummins found that because ESL students' face-to-face skills appeared adequate, they were no longer handicapped by their non-English background. Therefore, Cummins concludes that it is virtually impossible to construct a totally nonbiased IQ test (1984, p. 68).

The central controversy surrounding bilingual special education is the inaccuracy of the assessment process. P. L.94-142 recognized problems in the assessment and evaluation leading to placement of special education students. The law requires procedures to assure that testing and evaluation materials are selected and administered so as not to be racially or culturally discriminatory. P. L. 94-142 added two requirements: (1) no single assessment instrument may be used as the sole criterion for placement. (Thus assessment must go beyond the use of IQ tests alone) and (2) testing must be in the child's native language or mode of communication (Mowder, 1982, p. 11). Since Limited English Proficient (LEP) students are taught in English, they often do not acquire fundamental skills in subjects such as math and science. This problem may be falsely diagnosed as a learning disorder. Because the native language can provide a strong basis for the acquisition of a second language, instruction preferably should be in the native language in order to develop academic skills and provide a sound basis for English literacy (Cummins, 1984, p.265-66).

Ortiz and Polyzoi were concerned that special education referrals result from a teacher's lack of understanding of how a student acquires English as a second language. Rather than concentrating on efforts to determine the student's understanding of course material concepts, speech pathologists and diagnosticians rely on assessment procedures that measure a student's mastery of surface structures of language, such as a tests of phonology, syntax, and grammar (Ortiz and Polyzoi, 1986, p. 33). As a result, too many students are placed in special education programs and the effectiveness of the education for those who have real learning disabilities is reduced.

There is growing evidence that Hispanic students are being improperly placed into learning disabled programs because of their poor English ability rather than because of any real learning disabilities. P. L. 94-142 requires educational entities to plan the implementation of screening and referral services. In annual program plans, state and local education agencies detail the processes by which they locate, identify, and evaluate all handicapped students. In 1983, Ysseldyke et al., conducted a five-year longitudinal study on placement of learning-disabled students and found that students usually were tested with inadequate instruments. The placements were based on what Ysseldyke et al., considered "inconsistent and inherently problematic learning disabled definitions and criteria" (Benavides, 1986, p. 22). A national study by Alogozzino, Christenson, and Ysseldyke in 1982 found that once a student is referred, there is a 92 percent probability that the student will be tested and that 73 percent of those tested will be placed in special education programs (Benavides, 1986, p. 22). The assessment and screening of children begins early. In 1986, 33 states required some form of screening for special education students either in preschool or in early school years. Information is collected from parents, teachers, school placement personnel, and in some cases other persons such as nurses or doctors (Benavides, 1986, p. 21).

Alderman distinguished three basic conditions for academic failure: (1) students are placed in an environment that is not conducive to their individual learning styles; (2) children have achievement difficulties that are not due to handicapping conditions and thus can make satisfactory progress when instruction is adapted to their needs; and (3) students have major learning handicapping conditions and therefore need special education (Alderman, 1970, pp. 43-52). Unfortunately, many Hispanic students find themselves victims of the first condition. Ortiz and Garcia found that a student's cultural and linguistic characteristics are perceived by educators as deficiencies rather than differences (Ortiz and Garcia, 1986, p. 5).

In answer to numerous complaints about the abuse of the screening and referral processes used for special education, a prereferral process, designed to distinguish actual learning disabilities from low English proficiency through checking a student's background information, has been developed. Benavides (1986) perceives prereferral screening as a growing trend in the early stage of development. A foremost concern is developing a process that is easy to administer yet provides the needed information for appropriate referrals. Ortiz and Garcia (1986) argue that prereferrals should concentrate on the extent and nature of prior instruction because referrals usually are directed with the mastery of basic skills. Many bilingual education students are referred to special education programs due to their lack of English proficiency. According to Benavides, student referrals to special education classes are inappropriate unless four areas are analyzed:

1. the child's language proficiency in English and in Spanish;
2. informal assessment results describing levels of basic skills functioning in Spanish and English;
3. information about when the transition to language instruction occurred; and
4. whether the child was functioning adequately in Spanish at the time of the transition (Benavides,1986, p. 21).

The Handicapped Minority Research Institute on Language Proficiency at The University of Texas conducted a three-year study of Hispanic kindergarten students classified as handicapped in speech and language or as learning disabled. The study found that most students were referred for language problems. The percentages and specific reasons for referral were as follows: articulation/language 27.3 percent, speech 18.2 percent, articulation 13.6 percent, stuttering

9.1 percent, and unintelligible speech 9.1 percent (Ortiz and Polyzoi, 1986, p. 35). The study examined the therapist diagnosis for each case. Articulation and language was diagnosed as the problem in 66.7 percent of the cases; articulation, voice, and language in 16.7 percent of the cases; language only, language and fluency, and articulation, language, and fluency were diagnosed as the problem in 5.6 percent of the cases. The problem was diagnosed as severe or moderately severe in 66.6 percent of the cases and mild or moderately mild in 33.3 percent of the cases. Part of the assessment included an English language development test on which the students typically performed poorly. According to Ortiz and Polyzoi, students referred for articulation problems may need speech therapy. On the other hand, many of these students simply may be exhibiting the normal characteristics of second language acquisition (Ortiz and Polyzoi, 1986).

According to Bickel, studies have found that most new students enter special education programs through teacher referrals (Bickel, 1982, p. 187). Bickel's review of past research also found evidence that schools referring the lowest percentage of minority students had been integrated the longest (Bickel, 1982, p. 190). Perhaps schools learn to provide services more appropriate to the needs of Hispanic children as they become better acquainted with these youth.

POLICY OPTIONS

Harold Hodgkinson and others have identified the three major challenges facing educators as poverty, non-English-speaking students, and handicapped students (Spirduso, 1988, p. 2). All of these issues come into play in the placement of Hispanic students in special education programs.

Bilingual special education programs are basically a product of the 1980s, but will be at the center of special education issues in the 1990s. It is imperative that proper steps are taken to ensure that Hispanic students are placed in appropriate English-language environments and that bilingual special education programs are effectively administered.

The future for bilingual special education students appears much brighter than the past. For example, California has established a promising system of model schools to act as agents for reform. The Programs, Curriculum, and Training Unit of the Special Education Division, California State Department of Education, authorized the funding of six school districts as Bilingual Special Education Model Sites. A committee of selected educators from throughout the state evaluated the proposals regarding the extent to which they represented promising practices in bilingual special education. The committee developed a list of considerations in assembling an effective bilingual special education program. First, a high-quality regular educational foundation should be established with a strong interface among regular, bilingual, and special education staff. Second, effective staff development practices should be put into place. Third, site administrators should be involved in staff recruiting instead of relying solely on the district personnel office. Fourth, there should be high expectations for staff, students, and community involvement. Fifth, to promote program stability, financial support should come from several sources.

Problems in assessment and evaluation are now the subject of numerous studies detailing the inequities that have occurred as a result of inappropriate placements into special education programs. Research suggests that despite the appearance of change brought about by P. L. 94-142, the underlying structure of assessment processes has remained essentially unchanged (Cummins, 1986, p. 18-35). The issue is not just the technical challenge of developing advanced assessment techniques. Diagnosis and placement often are influenced by factors related to bureaucratic procedures and funding requirements rather than to a student's academic performance in the classroom.

Proper preparation of teachers and staff is necessary for bilingual special education to succeed. While most research has concentrated on the referral process and the problems of properly diagnosing actual learning disabilities, studies have emphasized the need for training the schools' entire instructional staffs. It is especially important for educators without special education training to understand the problems of handicapped students.

It is equally important for those in special education to understand the problems of Limited English Proficient (LEP) students. Members of special education departments tend to be monolingual, English-speaking Whites, who perform special education research, training, and professional development activities in areas unrelated to the emerging demographic trends (Yates, 1986, p. 3). Milne argues that "The monolingual teacher not only may not understand the student's language but also may be ignorant of the values of his/her culture, which may contain features, such as a dislike for personal competition, a present rather than future orientation, and a lack of initiative in problem solving, which conflict with characteristics of the dominant middle-class American culture, making adjustment or acculturation of the bilingual student difficult. Therefore, a need for cultural sensitization of special educators clearly exists" (Milne, 1982, p. 6).

One option for meeting this need is to recruit more minority teachers and staff into special education programs. A second option is to transfer minority educators from general education programs into special education. A third option is to educate existing special education personnel on the problems experienced by bilingual students. Although each option, if implemented, would do much to correct the present problems in staffing, it is highly unlikely that each could be accomplished fully. Taken together, all three could provide a strong foundation for an excellent bilingual special education program.

Administrators as well as teaching professionals must be well-trained in the problems of these students. Principals and other school officials are liaisons between the school and the community. They must be sensitive to their surroundings, and proper training can help to increase their awareness.

The student's family must also be considered. Many studies have noted the effects of problems among many minority families on student achievement. Singer and Butler (1987, p. 6) found that, "Even after controlling for site differences in parent participation, a White, married mother who had graduated from high school was 5.4 times more likely than a non-White, single mother who had not graduated from high school to have attended the most recent IEP conference held for her child. Hence, a program that gained enormous political support on the grounds that it was an entitlement for all rather than a means-tested program for the neediest few, has conferred predictably different entitlements on middle-class and on low-income children." Parents can offer the necessary support and security that a student needs in a special education program. The transition from home to school, and thus from Spanish to English can be facilitated by a positive relationship between the student's parents and the program. Such a positive relationship will contribute to the child's overall personal and intellectual growth (Cummins, 1984).

Assessment procedures must be improved significantly. Improper evaluation has led to inappropriate placement of many students into special education programs. Students should be given tests in their native language rather than in English. If the tests are administered correctly, those assessing student learning capabilities should have little trouble identifying learning disabilities. Advantages are offered to both students and schools. True learning disabled students will be appropriately placed and better served, and the school district will save the cost associated with educating the students who do not belong in special education.

Chapter 7. Magnet Schools: A Quality Alternative

by

Eric Fonken*

INTRODUCTION

Magnet schools are the fastest growing form of alternative education in the nation. Communities and school districts see magnet schools as a means to provide quality, innovation, and variety in our public school systems. Many look to magnet schools as a means to resurrect our educational system from mediocrity. This paper explores the effectiveness and efficiency of magnet schools in providing a quality educational environment and attempts to determine whether or not magnet schools are a viable alternative to traditional public schools.

Origins

The first modern magnet school began in Dallas in 1964 with the creation of the Skyline Career Development Center. This center was a business-backed school open to any student in the district, and its curriculum stressed a variety of vocational training areas (Moffett and Cogswell, 1979, p. 47). In 1972, a Federal District Court ruling on a Minneapolis desegregation case approved magnet schools as an acceptable part of desegregation plans, thereby establishing a precedent for the use of these schools as a vehicle for desegregation (Sterling, 1984, p. 25). In 1976 Congress passed an amendment to the Emergency School Aid Act (ESAA) establishing funding for magnet school grants to districts in the process of desegregating. As a result, magnet schools became identified with desegregation, and interest in magnet schools as a method of desegregation increased. In the first year of the grant program only 14 districts applied. By 1980, 100 districts had applied, and 65 were funded at $30 million (Blank, 1983, p. 8).

Since the mid-1970s, the number of magnet schools has grown rapidly. They are now the largest subgroup of alternative schools or schools-of-choice. Alternative schools can be defined as any school model that deviates from the standard Tayloristic model that is the foundation of our public school system. Between 1977 and 1982 the number of districts implementing magnet schools increased from 14 to 138, and since 1982 both the number of districts and the number of magnet schools within districts have grown. By the early 1980s, one-third of all urban districts operated magnet schools, with an average of 5 percent of students enrolled in such schools. The average number of magnet schools per district was approximately seven, with wide variation. Fifty-nine percent of magnet schools were at the elementary level, the remainder at the secondary level (McCurdy, 1985, p. 18.).

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Definition

Magnet schools are defined by the United States Department of Education as a ". . . school or Education Center that offers a special curriculum capable of attracting substantial numbers of students from different racial backgrounds" (Bryant, 1987, p. 3). Rolf Blank defines magnet schools as consisting of four elements: (1) a distinctive school curriculum based on a special theme or method of instruction; 2) a unique district role and purpose for voluntary desegregation; (3) voluntary choice by the student and parent of which school to attend; and (4) open access to school enrollment beyond the regular attendance zone (Blank, 1983, p. ii).

Originally used as a means of integrating large urban school districts in the northern states, magnet schools are increasingly used as a means to enhance the quality of education within a district by offering advanced courses in a specific subject area. Studies have shown that magnet schools may lead in general to increased student achievement, more positive student attitudes toward school, decreased violence and vandalism, and higher attendance rates than at traditional schools (Blank, 1983, p. 25). As a result, magnet schools have grown in numbers and are now found in large, small, and suburban districts alike.

Early magnet schools predominantly stressed math, science, and performing arts, but now magnet schools offer a variety of other curriculum options, such as open education, languages, health sciences, or business. The varieties are almost endless. Themes are no longer centered on subjects, but also instructional delivery strategies, educational philosophy, or curricula based on student needs or characteristics. Fleming found that elementary magnets tend to define themselves in terms of their pedagogical style, while secondary magnets are more likely to define themselves in terms of their curricular specialties (Raywid, 1984, p. 73). The most common themes are basic skills for elementary-level magnet schools, basic skills and arts for middle-level magnet schools, and arts for secondary magnet schools (Blank, 1983, p. 36).

Magnet schools have been used as a means to simultaneously implement desegregation and educational innovation, both of which are important to minorities. Various studies have suggested that desegregation improves minority students' achievement without hurting White students' achievement, and educational innovation is becoming more important as jobs increasingly require higher levels of education and greater understanding of technology (Blank, 1983, p.

36). Minorities are particularly at risk, as they tend to be outside of the economic mainstream. In general, states have found that magnet schools have helped to decrease dropouts, increase student achievement and application of learning, increase parental involvement and satisfaction, encourage economic and racial integration, provide extra challenges for gifted students, and raise the morale of educators dissatisfied with the conventional system (Nathan, June 1987, p. 747). Magnet schools encourage voluntary participation and tend to attract greater involvement from parents, businesses, universities, and the community than do traditional schools. Such involvement increases the support for a district's magnet schools and raises the quality of the education they provide. Magnet school charters often allow greater flexibility to design programs free from the standard formulas applied to other schools, thus nurturing greater diversity. Lowry found that magnet programs can renew both teacher and student interest and motivation. Several other consequences of magnet schools include providing parents with a choice within the public school system, encouraging the practice of a wide variety of educational methods and philosophies, and providing the means for the research and development of new programs and ideas.(Bryant, 1987, p. 25). Finally, magnet schools offer a more rational basis for school assignment—by area of interest instead of the geographic area in which one lives. George Tsapatsaris, project director of the Magnet School Network in Lowell, Massachusetts, sums up the rationale behind the widespread use of magnet schools:

> In a democracy you can't just tell people what's good for them and then impose it on them whether they like it or not. Yet, that's what we have always done in public education. We are all individuals. We learn and work in different ways. If you give students, teachers, and principals a chance to learn and work in an environment they prefer—a place they have chosen of their own free will, where they feel comfortable and respected—we think they will direct their energies toward a common goal: Excellence (McCurdy, 1985, p. 19).

For this reason, many feel that the likelihood of student success is greater in magnet schools than in regular ones.

However, magnet schools have also been widely criticized. Many accuse magnet schools and programs of skimming the brightest students and teachers from the district to attend the magnet. As a result, magnet teachers and students may be alienated from their peers, and dissatisfaction among nonmagnet teachers and students, as well as some parents, may result. Furthermore, magnet schools are often criticized as being much more expensive than nonmagnet schools.

ACADEMIC QUALITY

Magnet schools have claimed to provide higher-quality education for students than traditional schools. This seems intuitive given that magnet schools are usually funded at higher levels than traditional public schools and seem more likely to attract "quality" students. Although all of the factors that make magnet schools successful have not been identified, Blank found that quality is not related to the size, theme, or method of organization of the school (Blank, 1983, p. 214). The assumption that students attend so voluntarily out of genuine interest in the academic program or a greater educational challenge implies that those students have a high motivation level, thus leading to higher performance. These are just some of the factors that might explain the high quality of education at many magnet schools.

In a major two-year national study of 45 schools in 15 districts conducted in 1981-82 by Rolf Blank under funding from the United States Department of Education, magnet schools were found to provide a high-quality education for their students as rated by a composite measure of everyday activities at school. This composite measure, called the QED scale for "quality of education," included activity rate, interaction rate, sentiment rate, congruence of tasks with mission, and extent of realized resources" (Blank, 1983, pp. 36-37). The *activity rate* is a measure of the extent to which students are "on-task" and the degree of teaching activity and effort of teachers. The *interaction rate* is a measure of student-to-student and student-to-staff discussion of academic matters. The *sentiment rate* is a measure of the availability of help for students on their schoolwork, how much students are recognized for their improvement or outstanding effort, and student attitudes about school. *Congruence of tasks and mission* measures how well a school performs in meeting its goals and objectives. Finally, *extent of realized resources* is a measure of how well the administration and staff utilize their opportunity and creativity to develop a unique program. Standardized test scores were used as an additional measure of "quality." Although the QED rating may seem highly subjective, it is consistent with the subjective nature of defining educational "quality" and was the measure chosen by the researchers. Achievement data were obtained and analyzed for 32 of the 45 magnet schools (Blank, 1983, p. 41).

A high-quality magnet school was defined as one which exhibited the following characteristics: (1) students and staff are active inside and outside of the classroom; (2) administration, teachers, and students interact regularly on educational matters; (3) staff and students express a sense of community; (4) daily activities are geared to the school's goals; and (5) school resources are fully utilized (Blank, 1983, p. 39).

The Blank study found that one-third of the magnet schools in the study provided a "high quality" education as rated by the composite measure. A majority of the others showed "high quality" on some measures, but there was a wide variation across the sample. This majority received a "good" rating. Fifteen of the magnet schools (or 47 percent) rated over 75 out of a possible 100 (Blank, 1983, p. 39). Although the study did not compare its QED results to traditional schools in the districts, the composite rating scores suggest that magnets are at least equal to "good" regular schools, except for those "high quality" magnets, which would rate high on any measurement scale (Blank, 1983, p. 44)

With respect to math and reading test scores in the sample magnet schools, Blank found that over 80 percent of the magnets scored above the district average on reading, with fourteen of the schools (or 44 percent) exceeding the district average by 10 points or more and 2 (or 7 percent) exceeding the average by 30 points or more. In math, 13 (or 41 percent) of the magnet schools sampled exceeded the district average by at least 10 points, and 6 schools (19 percent) exceeded the average by 30 points or more. Overall, 14 (or 45 percent) of the magnet schools tested statistically significant above their district averages in both reading and math (Blank, 1983, p. 39-41). Other studies have concluded that magnet schools seem to stimulate significant cognitive, social, and affective growth for all students (Raywid, 1984, p. 76).

SELECTIVITY

Many opponents attribute the educational success of magnet schools to high student selectivity. Magnet schools thus skim the brightest students from around the district. Selectivity alone seems to have little effect on the educational quality of magnet schools. The Blank study defined *selectivity* as a process that selected students on any basis other than student interest in the academic program. So defined, 40 schools (89 percent) in the sample were considered "selective", with 6 schools (13 percent) considered "highly selective." Sixty percent (27 schools) required only that those students who entered the magnet be on grade level and have no serious social or behavioral problems (Blank, 1983, p. 61). While these criteria may be somewhat ambiguous, they serve to define an average student in relation to one who is well above grade level. In effect, the majority of magnet schools sampled did not seem to screen average students out of their programs.

The findings indicate that selectivity is not related to a school's QED score but is moderately related to math and reading scores. Schools with the highest test scores, however, were found to be only "moderately selective." While all 6 of the highly selective magnet schools had above average or better QED scores, so did 21 (47 percent) of the others. At anything other than the highest selectivity levels, the relationship between selectivity and quality of education offered is indeterminate. High-quality magnet schools served both above-average and average students. Thus quality education in magnet schools does not necessarily require the highest-ability students (Blank, 1983, p. 61). Blank concluded "that selectivity alone is not sufficient to produce quality education, even when educational quality is defined solely in terms of achievement scores" (Blank, 1983, p. 63). Thus, the educational success of magnet schools cannot be solely explained by skimming of the brightest students in the district.

EFFECTS ON SCHOOL DESEGREGATION

Although magnet schools were originally implemented to promote desegregation, they have often been criticized by minority groups and other supporters of desegregation as a means to avoid or delay earnest desegregation efforts. Some of the more common complaints include that magnet schools (1) are adopted as a "shell game" to create the appearance of desegregation; (2) are introduced to stall community complaints about insufficient desegregation efforts; (3) are set up as havens for students whose parents are opposed to the local desegregation plan; (4) draw off students, teachers, and resources from regular schools struggling with desegregation; (5) use elitist selection criteria to decrease minority access to such schools; and (6) accept minority students but then flunk them, counsel them out, or remand them to inferior schools (Blank, 1983, p. 98).

However, the Blank study did not find that such effects were widespread. Of the sampled districts, 10 (66 percent) created magnet schools as real attempts at desegregation, while the remainder did so as symbolic attempts (Blank, 1983, p. 76). In over 50 percent of the districts studied, magnet schools helped to reduce community conflict over desegregation and avoided future conflict (Blank, 1983, p. 14). Two-thirds of the systems took "significant" precautions to ensure racially mixed student bodies at their magnet schools. The remaining one-third ensured a "good" racial mix (Blank, 1983, p. 79). No specific statistics were found by the author to quantify the degree of racial mix. Although no district intentionally hired a fixed proportion of minority teachers, all took the staff racial mix into consideration and had a "good" mix (Blank, 1983, p. 98). Furthermore, implementation of magnet schools has been shown to reduce "White flight," especially in multiethnic areas and where economic and population growth occur simultaneously (Blank, 1983, p. 99). Moreover, magnet schools with high degrees of integration tended to have greater student achievement gains and higher-quality learning environments than those schools with less integration, although such findings are not correlated with the desegregation of traditional schools (Blank, 1983, p. 77). The conclusions from this study seem to suggest that districts can desegregate quite effectively through magnet schools.

COMMUNITY INVOLVEMENT

Community involvement has long been recognized as beneficial to local public schools. Davies (1978) and Gittel (1979) both found positive effects from a broad range of citizen involvement, especially by groups not ordinarily represented in a school system's power structure, namely the poor and minority groups. Brookover (1965) and Rosenthal and Jacobsen (1968) concluded parent involvement had positive effects on schools. As part of the major national study on magnet schools mentioned previously, Blank and associates found magnet schools to be an important catalyst for community involvement and at the same time found community involvement to be important to the educational quality of magnet schools (Blank, 1984, p. 22). The importance of community involvement in schools is widely accepted. Thus the provisions of the Emergency School Aid Act (ESAA) institutionalized community participation by requiring that local magnet school program advisory committees be formed and be active in districts applying for federal magnet school assistance (Blank, 1984, p. 4). Magnet schools may tend to have higher parent participation than normal schools by virtue of their choice-based nature, but the ESAA requirement enhances this involvement and guarantees its legitimacy.

While the Blank study used the same 45 magnet schools in 15 districts, the findings on community involvement were published separately. This study divided the community into three categories: parents of magnet school students, business and industry (private sector), and non-profit organizations such as universities, cultural organizations and foundations. The study examined the degree and type of involvement by each in all of the magnet schools (Blank, 1984, p. 6). The types of involvement were generally categorized as 1) program design and development; 2) public relations and recruitment; 3) instruction; and 4) support roles, which included provision of specialized equipment, sharing educational resources, staff loans, and providing internship or work opportunities outside of school. Senior research associates rated community involvement for each school as high, above average, or low for each of the three categories of participants (Blank, 1984, p. 12). While this method is quite subjective, it was the only one used in the study, and its findings are expressed in somewhat vague, although still useful terms.

Of the 45 magnet schools studied, 21 (47 percent) had higher parent participation than other schools in the district. This figure implies that the degree of parent involvement in magnet schools is at least on par with traditional district schools. Blank found that while the degree of parent involvement was not much above that for traditional schools, the type of involvement was more significant (Blank, 1984, p. 12). Parents of magnet school students were involved in (1) assisting with program design and development; (2) developing magnet school publicity and helping recruit new students; and (3) supporting the school through identifying educational resources, organizing special events, raising funds for special purposes, and arranging for the use of facilities. Parent involvement in magnet schools was thus found to be much more comprehensive than the standard participation in PTA by parents of students in traditional schools (Blank, 1984, p. 14).

Of the 45 magnet schools, 17 (38 percent) had high or above average participation by business and/or industry (Blank, 1984, p. 13). Private sector participation included the provision of learning experiences outside of the classroom, sharing educational resources, staff loans for specialized instruction, and provision of career internships. Private sector involvement in traditional schools was found to be almost nonexistent, and the concentration on a particular curriculum or teaching style as practiced by magnet schools was deemed to be the main reason for such high levels of private sector involvement (Blank, 1984, p. 15).

Blank found that 21 (47 percent) of the magnet schools in the study had high or above average participation by nonprofit organizations, which generally provided part-time or volunteer instruction in specific subject areas. Overall, 27 (60 percent) of the magnet schools rated high or above average participation from two of the three sectors (Blank, 1984, p. 13).

The Blank study also compared overall community involvement in each district's magnet schools with the aggregate quality (as measured by the QED and test scores) of education provided by the district's magnet schools. Out of 9 districts with a high degree of community involvement, 7 had QED scores of 72 or above out of 100 possible points. The four districts with a low degree of community involvement had the lowest QED scores of the sample, ranging from 42 to 61. While a causal relationship between community involvement and educational quality cannot be claimed, these findings suggest a strong correlation between the two variables (Blank, 1984, p. 22).

The findings on the effect of community involvement on the educational quality of magnet schools may be somewhat vague and perhaps not as strong as magnet school proponents would like, but they do suggest that community involvement is at least one important factor in the quality of education provided at such schools. Furthermore, the Blank study found that magnet schools with high degrees of community involvement tended to have quality basic curricula in addition to their specialized area (Blank, 1984, p. 23). Schools that had wide participation by a variety of parent groups, including minority and poor, as well as business and nonprofit tended to be of higher quality than those schools with less variety of participatory groups (Blank, 1984, p. 25). In conclusion, community involvement is at least one important factor in the quality of education provided at magnet schools, and these schools are an excellent means of attracting such involvement.

EFFECTS ON THE ATTITUDES OF STUDENTS, FACULTY, AND STAFF

Magnet schools have the advantage of attracting a group of students, faculty and staff who are united in an educationally significant way—they are voluntarily associated because of common interests or a firm commitment to learning. Voluntary association makes for a much more coherent group than just attending the school in one's area (Raywid, 1984, p. 73). As Erickson noted, it is the difference between *Gessellschaft* and *Gemeinschaft*—that is, between a formally constituted group held together by legislation and a genuine community bound by common interests and passions (Raywid, 1984, p. 74, citing Erickson, 1982). Such associations tend to personalize the school environment and make it a genuine community of individuals. A quality atmosphere, as found in voluntary magnet schools, leads to heightened personal and professional satisfaction for all involved: students, parents, teachers, and staff.

Raywid found that schools-of-choice, including magnet schools, instilled a strong sense of power in students for several reasons (Raywid, 1984, p. 74). Magnet schools have less need for restricting students because they are there by choice, not by force, and thus have fewer rules and regulations. As a result there is more freedom to express personal style in daily activities. The fact that students may opt out of the magnet school at any time they become dissatisfied is an additional source of student power and personal satisfaction. Finally, Raywid found that students perceived magnet school teachers as more "caring," perhaps because the teachers were at the school voluntarily. The overall result is a much different climate for students than is usually found in schools (Raywid 1984). Barr (1977), Doob (1977), and Muzio (1978) all found much better student attitudes at schools-of-choice, of which magnet schools are the most numerous example. Studies by Phillips (1977) and Nathan (1981) found that post-graduate students continue to have high regard for their old school, and the overwhelming majority felt that their experiences in a school-of-choice helped them in their post-graduate pursuits.

In addition to student attitudes, parent, faculty, and staff attitudes and satisfaction have generally been higher at schools-of-choice. Fleming (1982) as well as Metz (1981) found parent attitudes unusually high in schools-of-choice. Teachers and staff in magnet schools report very high levels of satisfaction, which they attribute to increased collegiality, professional autonomy, and personal influence on their work (Raywid, 1984, p. 77). Furthermore, studies have shown that as the positive effects of magnet schools become more well known, competition between them and other schools in the district will have positive attitudinal and academic effects on the other schools (Blank, 1983, p. 203).

THE COSTS OF MAGNET SCHOOLS

Magnet schools, while providing a quality educational opportunity, tend to require more funding than nonmagnet schools. Magnet schools usually require funds for specialized equipment, higher teacher salaries or additional teachers, and additional transportation costs. For the most part, however, these additional costs are low.

According to the Blank study, the average cost per pupil in 1980-81 for magnet schools was $2,652, compared to $2,452 for nonmagnet schools, or about 8 percent more. In 1981-82, however, these costs had fallen to $2,618, as compared to $2,559 for nonmagnet schools, or only about 2 percent more. Overall, the cost differential between magnets and nonmagnet schools decreased from $200 in 1980-81 to $59 in 1981-82. This decrease is due mostly to equalization of start-up costs (Blank, 1983, p. 115).

Among the magnets, costs at secondary schools were greater than those for middle-level (junior high) and elementary schools. In the 1980-81 school year, per pupil costs at the secondary level were $3,503 for magnet and $2,667 for nonmagnet schools, an $836 cost differential (31 percent). In the 1981-82 school year these per student costs had dropped to $2,953 for magnets and increased to $2,787 for other schools, a cost differential of only $166 (or 6 percent). In 1980-81 costs at middle-level magnet schools were $370 per pupil higher than at nonmagnet schools, an 11 percent difference. During the 1981-82 school year, this cost differential had increased to $449, a 14 percent difference. At the elementary level, costs for magnet schools were essentially identical to nonmagnet schools. In the 1980-81 school year, costs at magnet elementary schools were on average $5 higher, or about 0.02 percent, than at nonmagnet schools. In the 1981-82 school year this cost differential was $9, a 0.04 percent difference (Blank, 1983, p. 120).

Elementary and middle magnet schools had lower costs than their secondary counterparts because of lower personnel requirements. Single theme magnet schools were found to have lower costs than those with two or more themes. Such combination schools are more costly due to higher personnel requirements (Blank, 1983, p. 131). Overall, Blank found that between the 1980-81 and 1981-82 school years, costs decreased for magnet schools while they increased for nonmagnet schools (Blank, 1983, p. 121). Furthermore, the study found a strong correlation between spending and educational quality at the magnet schools—in other words, "you get what you pay for" (Blank, 1983, p. 138).

Transportation costs were found to be, not surprisingly, higher for magnet than nonmagnet schools. Costs are higher because magnet schools are open to anyone in the district, no matter how far from the school they live, and transportation must be provided. Busses must often travel great distances to pick up only a few students who live in areas scattered about the district. In 1981-82, transportation costs averaged $175 per pupil for magnet, compared to $138 for nonmagnet schools (Blank, 1983, p. 138) The cost per student for elementary magnet schools was $200, compared with $178 for secondary magnet schools. Overall, transportation costs were 27 percent higher for magnet schools than for nonmagnet schools (Blank, 1983, p. 115).

While the higher costs for education may be criticized, it is an obvious necessity for the future well-being of our educational system and, ultimately, our country. Increased spending on education is an integral part of the current education reform movement, and magnet schools warrant enhanced funding, as they offer a good educational value. When a long-run view is taken, magnet schools actually may be less expensive than regular schools because students in magnet schools are more likely to enter post-secondary education and earn and produce more for society in the future, thus "paying back" to society some or all (or more) of the additional costs of their magnet school education (Pearson, 1987, p. 18).

CONCLUSIONS

This chapter has examined many of the positive aspects of magnet schools. There are, however, many more indirect or unmeasurable positive benefits that were not mentioned. To discuss these would involve a high degree of subjectivity, so only those facts that could be readily observed or measured empirically were used. Even disregarding the unmeasurable benefits, magnet schools seem to offer a good educational value. Many studies, including the comprehensive national magnet school study conducted by Rolf Blank, have reached this conclusion. Not all magnet schools will succeed automatically in providing high-quality education. They must be set up properly and given sufficient support by the district and community. According to Raywid, two things are absolutely necessary for any magnet school to be successful: (1) enough separateness to sustain a distinct climate or ethos and (2) enough autonomy so staff can develop and implement their own vision of schooling (Raywid, 1984, p. 72).

Blank pointed out that magnet schools are more likely to be successful if they have strong community support (Blank, 1984, p. 16). If districts implement magnet schools and take care to secure community support, then magnet schools are likely to be an effective, efficient, and satisfactory means to enhance the educational quality districts can offer. Although magnet schools should not be viewed as a panacea for school reform, they can play a significant role in the restructuring movement.

Chapter 8. Magnet Schools for Disadvantaged Students in Texas

by

José Cano*

INTRODUCTION

By reporting that our schools were failing to meet the country's needs in *A Nation at Risk: The Imperative for Educational Reform,* the National Commission on Excellence in Education gave impetus to widespread efforts during the 1980s to improve education through school reform (U.S. Department of Education, 1983). The "first wave" of the reform focused on higher standards and requirements for the high school graduate. Improving the quality of teachers and upgrading the teaching profession have been the focus of the current "second wave." In its 1987 report, *Children In Need: Investment Strategies for the Educationally Disadvantaged,* the Research and Policy Committee of the Committee for Economic Development "call[s] on the nation to embark upon a 'third wave' of reform that gives the highest priority to early and sustained intervention in the lives of disadvantaged children" (1987, p. 3). Furthermore, *Children In Need* asserts that public schools serving disadvantaged students must be restructured in order to enhance the progress made as a result of early intervention that addresses the developmental problems of disadvantaged children through support systems such as preschool programs. However, the term *restructured* means different things to different people. It covers a wide variety of possible changes in the way schools are organized, staffed, managed and financed. Many states and local school districts are responding to the need for restructuring in order to provide disadvantaged students with a quality education by reorganizing elementary and secondary schools into magnet schools.

In the 1990s, providing a quality education for its disadvantaged citizens will be the fundamental key to the future success of America in the swiftly developing world economy. Many look to magnet schools as a means of restructuring schools in order to sustain an educated citizenry and a strong American heritage that will make the United States competitive in a global economy.

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MAGNET SCHOOLS—A MEANS OF REORGANIZING AND RESTRUCTURING TO PROVIDE A QUALITY EDUCATION?

Magnet schools are a form of "choice" in education. *Choice* is the concept that parents should be able to select the alternative that they think will be of positive benefit to their children from among schools (public and private) and program offerings (McCurdy, 1985, p. 7). The characteristics that set magnet schools apart from the conventional school are (1) voluntary participation, (2) a curriculum built around a central theme, and (3) a student body drawn from an attendance area that does not adhere to the traditional neighborhood school geographic boundaries (McCurdy, 1985, p. 17). There is a distinct difference between a magnet school and a magnet program. A magnet school encompasses an entire school's student body, whereas a magnet program includes only some proportion of the school's students plus students from outside the school's geographic boundaries (U.S. Department of Education, 1989, p. 29). Thus magnet programs are often referred to as "schools-within-schools."

Although the difference between a magnet school and a magnet program is obvious, most reports on magnet schools and/or magnet programs do not distinguish between the two. The two terms, *magnet school* and *magnet program*, are used interchangeably. Because the literature on magnet schools and magnet programs is so intertwined, this paper will summarize the findings of studies on magnet schools, magnet programs, or both. However, only the term *magnet school* will be used in this paper.

Boston Latin School, founded in 1635, is the oldest school in the United States that evaluated students who applied on the basis of their interests and motivation rather than their academic record or test scores. Other well-known specialty schools that could be considered early magnet schools, although they did not bear the label, "include Lowell High School in San Francisco, Central High School in Philadelphia, Bronx High School of Science in the Bronx, Aviation High School in Queens, Lane Tech in Chicago, and the New York High School of the Performing Arts in Manhattan" (Doyle and Levine, 1984, p. 266). The first magnet school in Texas, the Skyline Career Development Center, was opened in Dallas in 1964. Skyline offered a curriculum built around a variety of vocational training areas and was open to any student in the district on a voluntary basis.

The 1954 United States Supreme Court ruling in *Brown v. Board of Education* (*Brown*) coupled with the passage of the Civil Rights Act of 1964 put public schools in the forefront of national efforts to guarantee full civil rights to all American citizens. Court-ordered public school desegregation forced local school boards to design plans to desegregate their schools and to provide equal educational opportunities to all school children. *Brown* had reversed the long-standing "separate but equal" doctrine and found that state-mandated racial segregation in public schools was inherently unequal and thus unconstitutional (*Brown v. Board of Education*, 1954).

The Civil Rights Act, in addition to banning discrimination in public accommodations, provided for the termination of federal funding to segregated school systems and allowed the Department of Justice to bring suit in the federal courts against noncomplying school districts. The Office of Education in the Department of Health, Education, and Welfare was charged with developing and enforcing desegregation guidelines (Harvey, 1973, pp. 17-18).

One of the fastest growing developments in desegregation planning has been the use of magnet schools. The first federal district court decision to approve the magnet school concept as a desegregation remedy for the maintenance of voluntarily attended and racially balanced schools was in a 1972 Minneapolis school desegregation case (Sterling, 1984, p. 25). The United States Congress provided another boost to the expansion of the magnet school concept by passing an amendment to the Emergency School Aid Act (ESAA) in 1976. This amendment to the ESAA "authorized grants to support planning and implementing magnet schools for districts in the process of desegregating" (Blank, 1983, p. 11). As a result of this federal government support, the magnet school concept became identified as a desegregation tool, and the interest and attention of urban school districts toward magnet schools increased (Blank, 1983, pp. 11-12).

In 1976, the first year of ESAA magnet school funding, only 12 out of 14 districts that applied were funded. By 1982, however, 64 of the 75 districts that applied received funding and an additional 74 districts developed magnet schools without federal support (Blank, 1983, pp. 14-15). Of the 138 districts with magnet schools in 1982, 91 were large urban districts with over 20,000 students. Furthermore, the development of magnet schools between 1976 and 1982 occurred nationwide. In 1982 the regional distribution of districts with magnet schools consisted of 41 in the northeast, 30 in the midwest, 29 in the west, 24 in the southeast and 14 in the southwest . However, the proportion of urban districts with magnet schools was the highest in the southeast with 32 percent followed by the west with 24 percent, the midwest with 20 percent, the southwest with 13 percent and the northeast with 11 percent (Blank, 1983, p. 15).

In a supplement to his February 9, 1989, message to the Joint Session of the Congress entitled "Building A Better America," President George Bush proposed several educational reform initiatives. One of the initiatives pertained specifically to magnet schools and provided for expanded federal aid to magnet schools enrolling pupils from throughout a school district. In "Building A Better America," President Bush stated that (1) magnet schools are a way of promoting excellence and upgrading the quality of an entire school system, (2) expanding the use of magnet schools increases choice, expands opportunities for children, and ultimately improves the quality of all the schools, and (3) federal funds can help states and school districts design and implement magnet schools more rapidly (Office of the President, 1989, pp. 55-56).

More generally, proponents of magnet schools argue that magnet schools are effective models for achieving educational quality. Magnet schools reflect a central academic or vocational theme, stress voluntary participation, and promote social integration (Doyle and Levine, 1984, p. 266). Because of the "central theme" curriculum of magnet schools, "students' studies are likely to be more focused and their performance (as measured by standardized tests) will often be higher than that of their counterparts in other kinds of schools" (Doyle and Levine, 1984, p. 266). Student motivation in magnet schools is likely to be high because the students choose to participate. Social integration is promoted because students can participate in magnet schools without regard to the students' place of residence (i.e., neighborhood school geographic boundaries) (Doyle and Levine, 1984, p. 266).

However, magnet schools are plagued with the charge of elitism (Doyle and Levine, 1984, p. 266). Opponents argue that the separation of students by ability is undemocratic and wrong. Furthermore, opponents argue that magnet schools skim off the brightest students, leaving the conventional schools with the below-average students. Another important issue that is gaining attention among opponents of magnet schools is the higher cost of magnet schools (Chabotar, 1989, p. 169). Cutbacks in federal assistance and initiatives against an increase in local taxes make it difficult to justify new magnet schools which have a higher total cost per student than nonmagnet schools (Chabotar, 1989, p. 169).

RESULTS FROM RESEARCH ON MAGNET SCHOOLS

In the first comprehensive national study of magnet schools, conducted by James H. Lowry and Associates in 1983, magnet schools were defined using the following four criteria:

1. a distinctive school curriculum based on a special theme or method of instruction;
2. a unique district role and purpose for voluntary desegregation;
3. voluntary choice of the school by student and parent; and
4. open access to school enrollment beyond a regular attendance zone (Blank, 1983, p. 2)

In order to determine the number of magnet schools in the United States, the Lowry research staff contacted the 275 school districts with more than 20,000 students (since magnet schools are generally found in urban areas) and 75 smaller urban districts that had applied for ESAA federal funds from 1976 to 1981. The Lowry staff identified 138 urban school districts operating over 1,000 magnet schools. From this total population of urban districts operating magnet schools, a sample of 15 school districts operating 45 magnet schools was selected for the Lowry national study of magnet schools (Blank, 1983, p. 23).

Excluding reports summarizing studies undertaken by individual school districts, most research on the effects of magnet schools discusses the Lowry study (for example, see Chabotar, 1989; Clinchy, 1985a; Clinchy, 1985b; Doyle and Levine, 1984; McCurdy, 1985; and Raywid, 1984). Only the large urban districts can undertake time-consuming and expensive district-wide studies because they have the necessary trained personnel and funds. Therefore, knowledge about the positive and negative impact of magnet schools, in reality, is rather limited.

The Lowry study and other research on magnet schools have provided data on the ability of magnet schools not only to achieve and maintain racial balance in their own enrollments, but also to influence positively the racial balance in the school district at large (Blank, 1983, pp. 32-33; New York State Education Department, 1985, p. 63). Desegregation plans employing voluntary magnet schools have, over the long term, produced greater desegregation results than mandatory plans. The key to this success is that plans with magnet schools greatly reduce "White flight," which has often occurred in the first years of implementation of court-ordered desegregation plans (Blank, 1983, p. 34; Rossell, 1985, p. 7). Furthermore, in addition to their power as a desegregation tool, magnet schools have been increasingly recognized by evaluation studies as models of educational excellence.

According to proponents of magnet schools, some of the major areas in which magnet schools have demonstrated that they are models of educational excellence are (1) academic achievement, (2) curricula innovation, (3) educational choice, (4) low dropout rates, (5) parental involvement, (6) partnership programs, and (7) strong leadership.

Academic Achievement

The introduction of magnet schools in school districts results in improved test scores for students in the schools and a reduction in the number of students who are below grade. In the area of academic achievement, the Lowry study found that among the 32 magnet schools, 80 percent reported higher average achievement test scores than their district averages, (2) in over 40 percent of the magnet schools, students' average reading and mathematics achievement scores were over ten points above district averages, and (3) 20 percent of the magnet schools had average student achievement scores over 30 points higher than district averages (Blank, 1983, pp. 29-30).

A 1984 study conducted by MAGI Educational Services, Inc., of the 41 magnet schools in New York state revealed that a majority of the magnet schools had higher achievement test scores than the district average. Fifty-eight percent of the magnet schools performed better in reading, while 65 percent performed better in mathematics. Furthermore, almost 25 percent of the magnet schools surpassed the district averages by more than 10 points (New York State Education Department, 1985, p. 25-26).

Likewise, students in the 95 magnet schools in the Los Angeles Unified School District scored an average of up to 30 points higher on California's state achievement test than students in nonmagnet schools ("Math Lesson," 1990, p. B-1).

During the 1982-83 school year, students in the 5 magnet schools in the Fort Worth (Texas) Independent School District scored 2 to 3.9 years above district norms and showed 1.5 to 2.5 months gain per month of instruction (Abadzi and Dunkins, 1984). Black students, who accounted for 50 percent of the magnet schools' enrollment, scored lower and showed slightly smaller gains than White students. However, the Black students in the magnet schools scored 1.6 to 3 years above the district norms for Black students. The ethnic/racial breakdown of the Forth Worth magnet schools was Black, 50 percent; White, 35 percent; Hispanic, 9 percent; and Asian, 6 percent.

Curricular Innovation

Magnet schools feature a great diversity of curricular themes to attract students. They offer different types of academic programs, including humanities, health sciences, science, mathematics, or foreign languages; the performing and creative arts; vocational and technical education; and learning methods such as immersion or Montessori programs (U.S. Department of Education, 1989, pp. 29-30). For example, in Dallas, Texas, the district's 19 magnet schools have developed themes which include arts, business management, health professions, human services, law, transportation, humanities/communications, science/engineering, talented and gifted programs and career development (McCurdy, 1985, p. 20). In general, magnet elementary schools tend to define themselves in terms of a instructional approach, such as open education, basic training, or Montessori; whereas magnet high schools are most likely to define themselves according to curricular specialties (Raywid, 1984, p. 72).

Educational Choice

Magnet schools are unique in that parents may choose a school that is responsive to the educational goals they have for their children. Magnet schools allow students to cross school and school district boundaries (in some cases), and permit parental choice in selecting public schools (U.S. Department of Education, 1989, p. 47). The diversity of curricular themes that characterize magnet schools afford choices to parents with children who have differing interests and learning styles (Doyle and Levine, 1984, p. 267).

Low Dropout Rates

Attendance rates for magnet schools are typically higher and dropout rates lower than district averages. The Lowry study showed that when comparing average daily attendance and dropout, suspension, and transfer rates, magnet schools had more positive outcomes than district averages (Blank, 1983, p. 30). The MAGI study revealed that 90 percent of the magnet schools had higher attendance rates than the district averages (New York State Education Department, 1985, p. 29). Furthermore, the MAGI study found that 73 percent of the magnet schools had dropout rates below the district levels (New York State Education Department, 1985, p. 29). The attractive curricula of magnet programs encourage students to regularly attend and to remain in school (Doyle and Levine, 1984, p. 266). In New York City, during the 1987-88 school year, the average attendance of ninth-grade students in three out of four magnet schools exceeded the district average by 11.6, 14.4, and 27.8 percent, respectively. Attendance for the fourth magnet school was slightly lower (1.8 percent) than that of the district (Mei, August 1988, p. 8).

Parental Involvement

Magnet schools typically have high levels of parental involvement beyond traditional PTA meetings and parent conferences. Parents participate in program design and development (Blank, 1983, p. 36). The MAGI study found that parents regularly participated in magnet school activities and strongly supported the magnet school and that 98 percent of the parents said that they would recommend magnet schools to other parents (New York State Education Department, 1985, p. 62).

Partnership Programs

Magnet schools have a high degree of participation in partnership programs with business and industry, community-based organizations, and higher-education institutions. According to the Lowry study, community involvement from parents, businesses, universities, or community organizations included providing unique assistance with instruction and resources for learning (Blank, 1983, p. 29), participation in designing programs, and writing curricula, providing part-time teachers, and arranging for special equipment (Blank, 1983, p. 36).

Strong Leadership

Magnet school principals are typically strong, innovative, and entrepreneurial leaders capable of motivating staff and students to high levels of performance. The Lowry study found that the principal is the key leader in the development of a curriculum, the available resources, and community involvement into an effective magnet school (Blank, 1983, p. 31).

The Lowry study and other research on magnet schools also provided information on the two critical issues raised by opponents of magnet schools. These are costs and selectivity.

Costs

The total cost per student in magnet schools is higher than for nonmagnet schools. According to the Lowry study the average total cost per student for a magnet school was $200 more than for nonmagnet schools during the 1980-81 school year, and the cost declined to $59 more in 1981-82 (Blank, 1983, p. 34). However, a breakdown by school level reveals that during the 1981-82 school year the average total cost per student in magnet secondary schools was $166 more than in nonmagnet secondary schools (Blank, 1983, p. 34). On the other hand, during 1981-82 the average total cost per student in the magnet elementary and intermediate schools was less than in the nonmagnet schools by $93 and $449, respectively (Blank, 1983, p. 34).

In a 1989 review of the Lowry study, Chabotar compared total cost per student to average building enrollments for magnet and nonmagnet schools. As average building enrollments increased, total cost per student decreased for the magnet schools (Chabotar, 1989, p. 174). Thus, when compared to nonmagnet schools, higher average building enrollments for magnet elementary and intermediate schools contributed to their lower total cost per student whereas lower average building enrollments for magnet secondary schools led to higher total cost per student. Chabotar's review of the Lowry study suggests that magnet secondary schools may be more selective and less utilized than magnet elementary and intermediate schools.

The Lowry study states that the specific items accounting for the higher cost of magnet schools are average salary per classroom teacher for magnet secondary schools and nonpersonnel costs per student (Blank, 1983, p. 35). Chabotar (1989, p. 174) found that at the intermediate and secondary school levels magnet teachers are usually more experienced and educated and received higher salaries than nonmagnet teachers. For the same reason, according to Chabotar, magnet teachers at the elementary school level had lower average salaries than their nonmagnet counterparts.

The two major reasons that nonpersonnel costs per student were higher in the magnet schools were higher costs for student transportation and higher costs for facilities and equipment (Chabotar, 1989, p. 175). Using data from the Lowry study, Chabotar estimated that magnet schools had 27 percent (about $37 per student) higher average costs per student for transportation than nonmagnet schools during the 1981-82 school year. Higher costs for facilities and equipment in magnet secondary schools than in nonmagnet secondary schools led to higher facilities and equipment costs for magnet schools overall. In 1981-82, costs for facilities and equipment were 7 percent less per student for magnet elementary schools than nonmagnet elementary schools and 15 percent less for magnet intermediate schools (Chabotar, 1989, p. 175).

The Lowry study also found that the total cost per student for magnet schools varies by theme with single-theme magnet schools having lower costs than combination themes. For example, annual single-theme costs per student were $1,899 for social studies, $2,214 for science/mathematics, $2,408 for general academics, and $2,686 for arts. When two or more themes were combined in a magnet school the average cost per student was $3,358 (Blank, 1983, p. 35).

Selectivity

Of the 45 magnet schools in the Lowry study, 14 used achievement test scores, grade point averages, or other highly selective methods of admitting students (Blank, 1983, p. 29). Thus in 31.1 percent of the magnet schools studied, students with academic problems were screened out. In the Lowry study, the magnet schools with the highest achievement scores generally had used more selective methods of admitting students (Blank, 1983, p. 30).

Not all students who want to attend a magnet school do so. For example, each year more than 30,000 students apply for the 8,500 seats available in the magnet schools of the Los Angeles Unified School District ("Math Lesson," 1990, p. B-1). The Los Angeles Unified School District uses a formula that includes a student's background, minority status, prior waiting list status, or status of siblings to compile a final enrollment list for its magnet schools ("Math Lesson," 1990, p. B-1).

Doyle and Levine (1984, p. 266) noted that Albert Hirschman made the most powerful provocative statement about selective schools. According to Doyle and Levine (1984, p. 266), Hirschman argued that selective schools are an accommodation reached between quality-conscious parents who will not tolerate low-quality public schools and public schools that will not tolerate continual complaints from a small but vocal group of unhappy parents. Thus, according to Hirschman, public magnet schools serve as a high-quality alternative to private schools within the public sector. In other words, parents with children in magnet schools are seeking private schooling for their children at public expense.

THE STUDENT POPULATION OF TEXAS

The Texas student population of the 1990s is vastly different from those of earlier times. Like other American students, Texas students are diverse, coming from many cultures. During the past five years, the Texas student population has grown, increasing in ethnic and racial minority enrollment (which has just become the majority), in urban areas, and in the early age groups.

According to the Texas Education Agency (TEA), the Texas student population grew by a total of 7.6 percent between 1984 and 1989. In 1989 there were 3.2 million students in grades prekindergarten through 12 in the Texas public school system (regular and special statutory districts). Furthermore, in 1989 (for the first time in three years) the rate of growth did not decline. TEA has estimated that the Texas student population will continue to grow to 3.5 million students by 1993. Growth in the state's minority student population accounts for most of the recent total student growth in Texas (Texas Education Agency, March 1990, p. 5).

Hispanic student enrollment grew to 32.3 percent of total enrollment in 1989, a 21.9 percent increase from 1984. In 1989 the Black student population was 14.6 percent of the total, a 10 percent increase from 1984. The combined American Indian and Asian student enrollment was relatively small at 2.1 percent of total enrollment in 1989. However, the American Indian and Asian student populations increased significantly, to 27 percent and 33 percent respectively, from 1984 to 1989. In comparison, the nonminority student population increased by only 1.8 percent from 1984 to 1989 and was at 51 percent of the total in 1989. Furthermore, since 1987 the nonminority student population has experienced negative annual growth rates (Texas Education Agency, March 1990, p. 6).

Most of the Texas student population growth between 1984 and 1988 took place in the counties surrounding the Dallas/Fort Worth metroplex, the Austin/San Antonio corridor, and the lower Rio Grande Valley region. Some of these counties have experienced as much as 40 percent student growth as their character shifts from rural to urban (Texas Education Agency, April 1989, p. 6). Thus, in 1989 almost 50 percent of Texas's student population was from minority backgrounds, and most of the total student growth since 1984 has been in urban areas (where magnet schools are most popular) such as Dallas/Fort Worth and Austin/San Antonio.

In addition, most of this growth since 1984 has been in the elementary school grades (1 through 6) and kindergarten/prekindergarten programs, such as disadvantaged prekindergarten, Special Education Early Childhood Programs, and kindergarten. From 1984 to 1989 the elementary grades and kindergarten/prekindergarten student populations grew by 9 percent and 40.4 percent, respectively. On the other hand, the percent change from 1984 to 1989 in enrollment in grades 7-8 decreased slightly from approximately -2.5 percent to -5 percent and in grades 9-12 remained relatively stable at an estimated 5 percent (Texas Education Agency, March 1990, p. 5).

The demographic changes in the Texas student population pose a challenge because an increasing percentage of the students come from ethnic and racial minority groups that have historically been disproportionately educationally disadvantaged or at risk. Students identified as at risk are those who meet one or more of the following criteria established by House Bill 1010 passed by the 70th Texas State Legislature and effective September 1, 1987:

1. have not been promoted one or more times and are in grades 7-12,

2. are two or more years below grade level in reading or mathematics,

3. have failed at least two courses in one or more semesters and are not expected to graduate within four years of the time they enter the ninth grade, or

4. have failed one or more of the reading, writing or mathematics sections of the most recent Texas Educational Assessment of Minimum Skills (TEAMS) tests (Texas Education Agency Dropout Information Clearinghouse, April 1989, p. 11; Texas Education Agency, December 1988, p. 8).

School districts in Texas have been instructed by the Texas State Board of Education to "also consider other environmental, social, economic, developmental, and familial factors in identifying disadvantaged students, including delinquency, limited English proficiency, underachievement, lack of motivation, pregnancy, or sexual, physical, or psychological abuse" (Texas Education Agency, December 1988, p. 8). Furthermore, districts must plan for and provide programs to meet the needs of disadvantaged students (Texas Education Agency, December 1988, p. 8).

Disadvantaged students have a greater risk of failure than others because of low socioeconomic family status, below-average basic skills (Texas Education Agency Dropout Information Clearinghouse, April 1989, p. 18), a lack of parental involvement in the student's education, and psychological and social factors (Texas Education Agency, December 1988, p. 8). If their specific needs go unmet, disadvantaged students may drop out of school or otherwise enter the workforce ill prepared and with a low chance for success. Students who leave school prior to graduation, "do so as a result of a complex combination of factors ranging from poor academic performance, dissatisfaction with school and/or teachers, the need or desire to work, family problems, marriage, or pregnancy" (Texas Education Agency Dropout Information Clearinghouse, April 1989, p. 18). A major problem of students dropping out before graduation exists in Texas high schools. In 1989, TEA calculated a statewide dropout rate of 29.8 percent by comparing graduates to 8th graders five years prior. The 1989 dropout rates by ethnic/racial group were: Hispanic, 38 percent; Black, 34 percent; and nonminority, 26 percent (Texas Education Agency, March 1990, p. 7). Thus, a disproportionately higher percentage of minorities drop out of high school.

In addition, results of state-mandated minimum skills tests indicate that the scores of educationally disadvantaged students are significantly lower than those of other students (Texas Education Agency, December 1988, p. 8). During the 1985-86 school year, on the Texas Educational Assessment of Minimum Skills (TEAMS), 13 percent fewer disadvantaged than other eleventh grade students passed the mathematics test and 14 percent fewer passed the English language arts test. Both are exit level tests required for graduation (Texas Education Agency, January 1987, p. 7). Ironically the very tests that reveal the disparity in academic achievement between disadvantaged and other students may be assisting in widening the gap. Schools that fail to realize that minimum skills testing is not an adequate measure of learning may tend to concentrate on preparing students to pass TEAMS (Texas Education Agency, January 1987, pp. 7-8). Schools need to devote more time to the development of analyzing, synthesizing, and other critical-thinking and problem-solving skills (Texas Education Agency, January 1987, pp. 7-8).

EFFECTIVE SCHOOLS ADDRESS THE UNIQUE NEEDS OF DISADVANTAGED STUDENTS AND PROVIDE A QUALITY EDUCATION FOR ALL

The primary responsibility of an educational system is to help shape the students it serves by providing a base for their development. Therefore, an educational system should reflect the students it serves, and it should change with the needs of the students. M. L. Brockette, former Texas commissioner of education, included the following in the forward of a 1975 TEA bulletin featuring 16 programs for minority students:

> Texas schools, in their determination to provide a quality education for all children, have produced many programs designed to meet the unique needs of the state's minority population . . . all different in their approaches and each designed to meet the needs of these schools' students (Texas Education Agency, 1975).

The major changes occurring in Texas's student population are already having profound effects on Texas public education. Serious problems of educational equity, quality education for disadvantaged students, flexibility with accountability, and organizational effectiveness and efficiency (Texas Education Agency, December 1988, p. 6) have arisen. Naturally, the Texas public school system must reflect these changes by responding to them. Texas must keep abreast of its new diversity and educational needs.

In order to enhance the school success of disadvantaged students, G. Alfred Hess offers the "effective schools" approach. As stated in *Information Manual Of Alternatives Guiding Educational Success (IMAGES),* a TEA publication on dropout prevention and recovery, "the effective school approach emphasizes the potential of schools to overcome the influence of student background characteristics and reduce the number of students who are not successful in school" (Texas Education Agency, January 1988, p. 10). According to Hess, the effective school approach was a rebuttal to the idea that poor children are destined to become low achievers because of certain inherent disabilities (Texas Education Agency, January 1988, p. 10). Hess and his associates reviewed most of the literature on the effective school approach. According to the summary of their research presented in IMAGES, effective schools have

1. strong, optimistic, and disciplinarian principals who take personal responsibility for the tone of the school and monitoring the level of teaching,
2. activist parent groups that insist that minimum academic standards be met,
3. a hierarchy of priorities that is not dependent on funding (clear objectives for achievement, staff development, joint planning by the principal and staff, and efficient scheduling of staff activities),
4. a faculty atmosphere that is one of consensus under which institutional values become accepted as objectives rather than opinions,
5. teachers that have a collegial and a professional relationship among each other and with the principal,
6. teachers that focus on raising student achievement rather than on discipline or paperwork,
7. a safe and attractive building because physical environment has a psychological effect on the people in it,
8. a curriculum oriented towards basic skills, mathematics, and reading, and
9. a conception of the faculty as coparents of their students (Texas Education Agency, January 1988, pp. 10-12).

DO MAGNET SCHOOLS PROVIDE DISADVANTAGED STUDENTS WITH A QUALITY EDUCATION?

Knowledge about magnet schools is rather limited. First, only one national study (Blank, 1983) has been conducted on magnet schools. Furthermore, the data utilized in the Lowry national study are already 10 years old. Second, excluding reports summarizing studies conducted by the research departments of school districts, almost all subsequent reports have been based on the Lowry study. Third, there appears to be no clear-cut, widely accepted set of evaluation criteria for judging the effectiveness of magnet schools. Some of the studies made comparisons between magnet schools, others between magnet and nonmagnet schools, and still others between the magnet schools and the school districts to which they belong.

These types of comparisons limit the study and evaluation of magnet schools to the schools themselves. Therefore, none of the studies made valid student comparisons. In other words, different schools and school processes are being compared, not students.

Control groups need to be established in order to conduct empirical research. However, the idea of forming a control group consisting of identifiable disadvantaged students to whom no special assistance will be provided is not practical. Although time-consuming and expensive, case studies are an alternative to consider in order to alleviate this problem.

According to the comparisons presented in the studies of magnet schools, students in magnet schools are successful. However, because of the nature of the comparisons, conclusive evidence that magnet schools cause higher academic achievement, higher attendance rates, and lower dropout rates is lacking. Furthermore, magnet schools may simply attract students with these characteristics. This can be especially true of those magnet schools that are highly selective.

The overall higher cost of magnet schools is driven by the higher cost of facilities and equipment for magnet secondary schools. Because of lower average building enrollments, magnet secondary schools also have a higher total cost per student when compared to all other schools; magnet elementary and intermediate schools and nonmagnet schools. Therefore, magnet secondary schools may be more selective than magnet elementary and intermediate schools and less effectively and efficiently utilized than all other schools. Furthermore, the "true" cost of magnet schools could very possibly be significantly understated because magnet schools have a high degree of participation in partnerships with business and industry to arrange for special equipment and provide other resources at no additional cost to the school district.

Almost 50 percent of the 1989 Texas student population was from ethnic and racial minority groups that have historically been disproportionately educationally disadvantaged. Furthermore, most of the total student growth since 1984 has been in the Dallas/Fort Worth metroplex and Austin/San Antonio corridor (urban areas where magnet schools are most popular), and in the lower Rio Grande Valley region. Therefore, whether or not magnet schools are effective school models that address the unique needs of disadvantaged students is a valid question for the Texas public education system. A comparison of Hess's characteristics of an effective school to the positive impact of magnet schools suggests that magnet schools can be effective schools that address the unique needs of disadvantaged students. First, magnet schools have strong, innovative, and entrepreneurial principals. Second, magnet schools typically have high levels of parental involvement. Third, magnet schools focus on student academic achievement. Finally, magnet schools can stress a curriculum oriented towards basic skills.

However, the establishment of a magnet school within the school district would be difficult if not impossible for small districts with few schools like those found in the lower Rio Grande Valley and other regions of Texas that are still shifting from rural to urban characteristics. For example, in the lower Rio Grande Valley region, the area consisting of Cameron, Hidalgo, Starr, and Willacy counties, 21 out of 32 school districts have only one high school and 5 do not have a high school (Texas Education Agency, March 1990, p. 50, pp. 86-92, p. 134, p. 150).

HOW CAN MAGNET SCHOOLS BETTER ADDRESS THE UNIQUE NEEDS OF DISADVANTAGED STUDENTS?

Texas can lead the nation in studying and evaluating the school success of disadvantaged students in magnet schools. Case studies of magnet schools in the school districts throughout Texas are in order. Therefore, new magnet schools should be funded at levels which provide space for all disadvantaged students while maintaining a reserve for evaluation and follow-up studies. Furthermore, a state-wide survey of the students in Texas's magnet schools should be conducted. Clear-cut evaluation criteria for judging the effectiveness of Texas's magnet schools should also be developed.

Magnet schools' admission policies should ensure that their student bodies reflect the academic, ethnic/racial, socioeconomic and special needs profile of the area they serve. Furthermore, efforts should be made to ensure that the admission policies do not favor those who are better informed. Finally, ways to make magnet schools at the secondary level less selective and more efficient and effective need to be explored. For example, the consolidation of school districts, especially in Texas's rural regions, should be considered for the purpose of establishing effective magnet schools that will serve a larger enrollment.

Chapter 9. Performance-Based Funding for Schools: A Practical and Feasible Alternative

by

David M. Marchick*

INTRODUCTION

A greater interest in education has been coupled with a growing concern with performance management in the public sector. According to Christopher King of the University of Texas at Austin, this phenomenon is a result of "twin pressures of a more informed, demanding taxpaying public, coupled with ever tightening budgets at all levels, especially those closest to the taxpaying public" (King, 1988, p. 1). Public sector performance has recently been compared to that of the private sector, even to the nation's best run companies (Benveniste, 1985, p. 261). The sum total of all these factors is a public demanding more from education. One aspect of this new challenge, allocating educational funds on the basis of student performance, is the focus of this chapter.

This initiative is both theoretically sound and politically feasible. It offers a value-added approach to providing extra funding to schools as a reward for improving student performance. Performance-based funding is often mentioned by education practitioners and theorists as a way to reinvigorate the educational system. It has become an agenda item of many of the nation's leaders, both conservative and liberal. Support for performance-based funding by the National Governors Association is testimony to this idea's political popularity (National Governor's Association, August 1986). The governors' thinking is that education is not only vital for continued economic growth, it is essential for preparing individuals for effective citizenship in a democratic society.

Other factors also suggest that the now is the appropriate time for change. For example, the National Center for Education Statistics predicts that by 1992, there will be 283,000 fewer teachers nationwide than positions available. Historically, problems due to a shortage of teachers have been addressed by simply lowering standards. The internationalization of the economy and the challenge the United States faces to maintain competitiveness have made lowering standards an unacceptable alternative. Thus, both the necessary stimulus and a ripe political environment are present for educational reform.

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By no means will this initiative be an all-encompassing ameliorative solution. Instead, it is a very important part of a complete reform package which includes more effective teaching methods, greater family support for students, enhanced teacher-management relations, and, most importantly, hard work by students.

CURRENT FUNDING SYSTEM: THE FIRST PROBLEM

Local government has traditionally provided the bulk of school funding. Recently, however, state governments have assumed a greater share of the responsibility. At the same time, education policy has attempted to be more inclusive of and equitable for all sectors of society. Yet despite such encouraging changes, many of the old funding parameters still exist, especially the fixed-step system and enrollment-based funding.

Years of experience and credit hours are two of the primary determinants of teacher salaries under the fixed-step system. Classroom performance and productivity assume a tertiary role in salary evaluation. Moreover, because of the rigidity of the fixed-step approach and limits on school-district funds, average teacher salaries have tended to lag behind those of comparable professions. Some education experts suggest that the major failure of the fixed-step approach is that minimum and maximum salaries are "usually arbitrarily determined" (Bruno,1986, p. 431).

Changing the salary structure for teachers is often mentioned as a primary step toward improving student performance. Higher teacher salaries will attract brighter teachers, who, in turn, will enhance student learning. Teacher salaries are at the low end of the spectrum for college graduates. Moreover, the prospects for salary growth do not compare to similar occupations. Teaching is unique in that it is a profession which fails to offer satisfactory career growth. Several interesting consequences are apparent because of the teaching profession's structure. First, the salary structure compels many teachers to leave the profession as soon as they obtain the experience to be most effective. Moreover, Phillip Schlecty and Victory Vance found that the most academically able teachers are the first to leave the profession (National Governors Association, 1986, p. 15). Most teachers reach the top of the pay scale after only 10-12 years of professional experience. Unlike almost any other profession, teachers have few status-oriented opportunities available after reaching this zenith. The National Governors Association reports that teachers "lower their professional expectations or simply withhold service" because of the lack of organizational inducements (1986, p. 15). Although the effects of lower teacher expectations are not fully understood, withholding services has a detrimental effect on student performance. Finally, being at the low end of the pay scale reduces teacher morale and enthusiasm. In fact, surveys of teachers have shown that half, partially because of their low salaries, feel that students, parents, and society at large no longer respect them (National Governors Association, 1986, p. 47). Under these circumstances related to working in an early exit, low paying profession, the prospects for attracting the 283,000 qualified teachers needed to simply meet society's demands in 1992 are slim. This trend is even more urgent when considering the low number of Bachelor of Arts and Bachelor of Science degrees to be awarded by that date.

As a result of all these factors, the quality of teachers and the ability of those who are interested in teaching is declining. James Fox reports that those teaching our children do not demonstrate high academic ability and "by about any academic standard that can be applied, students in teacher training programs are among the least able on campus" (Fox, 1984, p. 215). This is quite an alarming observation.

Funding based solely on attendance promotes outcomes contrary to the most important goal of education: learning. Despite this inherent contradiction, since World War II, an increasing share of public school revenue has been based on student attendance. As a report by the National Center for Policy Analysis says, "there is a fundamental conflict between the goal of higher attendance and the goal of higher academic achievement" (1983, p. 1). As a result, many schools are simply trying to keep kids in school, instead of trying to teach kids in school. This phenomenon is even more apparent in inner-city, minority schools, where disciplinary activities require more time from teachers and administrators . Some suggest that the financial incentives of enrollment-based funding create perverse behavior in schools. For example, schools across the country have recently implemented a "tattletale computer," which automatically telephones parents at home if their child missed school; thus, the computer is used to minimize absences. A valid goal, it seems, except when one considers both the cost of the computer, $500,000, and the alternative ways this money could be spent. Investment in such a computer is not surprising under the current funding system, for, according to one source in Chicago, "it could pay itself off in less than one year" (National Center for Policy Analysis, 1983, p. 4).

Perhaps the greatest problem with enrollment-based funding is that it offers no incentive for schools to improve. Teachers who bring their students' work home at night are paid the same as those who don't. Performance and productivity depend much on each individual teacher's interest and willingness to put out the extra effort needed to make a difference. In the long run, reliance on individual motivation independent of rewards is neither a great enough nor a stable enough incentive to meet the demands on education by the taxpayers.

MERIT PAY FOR TEACHERS?

The first formal merit pay plan for teachers, according to Professor Jerome Cramer, was created in 1908 in Newton, Massachusetts (Cramer, 1983, p. 28). Merit pay for teachers reached its zenith in the early 1920s, according to one education researcher, because it allowed schools to pay White and male teachers more at the expense of Blacks and women (Cramer, 1983, p. 28). According to Howard Carroll, a spokesman for the National Education Association, "The history of merit pay is one of favoritism and cronyism. Principals tend to use it mainly to make teachers toe the line" (Fiske, 1989b, p. B-6). Yet, with the introduction of and greater reliance on salary schedules and tenure laws, merit pay has steadily declined since the 1920s. In fact, in 1978, only about 4 percent of the nation's school districts reported the use of merit pay.

By definition, merit pay is a compensation system that gives performance bonuses to teachers who meet or exceed some agreed-upon criteria. There are two major questions in the debate: first, what criteria are both fair and representative of important educational goals and, second, who is to decide upon and judge teachers under these criteria? The major assumption of a merit pay system is that it is an outcome-sensitive alternative to the existing system in which there is neither an effective career ladder nor appropriate incentives (Garms, 1986, p. 371). Supporters of merit pay suggest that it creates an opportunity for teachers to be more goal oriented and have the ability to reach such goals. Some theorists and practitioners suggest that merit pay should include a career ladder for teachers. Teachers, then, would be promoted into higher levels of teaching, not into administration, as is the case today. Furthermore, from a sociological perspective, earning a salary tied to performance "symbolizes the professional's ability to have a say about his or her economic future," (Tecker, 1985, p. 56) thereby raising both the morale and the status of the profession. Thus, supporters suggest it is an effective, necessary, and incentive-laden approach for recruiting and retaining good teachers.

Merit pay brings with it much unwanted baggage. Perhaps the most important problem is that teachers appear to have serious qualms—not over the idea of getting paid for performance—but over whether there is a fair and effective way to evaluate teacher performance. In many respects, teachers are correct. For example, in order to measure teacher performance, a measure is needed to evaluate the extent to which specific material has been assimilated by students. Yet, as Garms suggests, "good tests are hard to come by" (Garms, 1986, p. 371). Also, once a student has more than one teacher per day, as in most schools in grades 7-12, it is very difficult, if not impossible, to measure exactly what contribution one teacher has made to each student's learning (not to mention the infeasibility of measuring student effort). The recent and well documented experiment with merit pay in Fairfax County, Virginia, appears to have failed because of a lack of trust between teachers and principals (Fiske, 1989b, p. B-6). Thus, teachers have a well-justified argument in criticizing methods of evaluating teaching.

Principals, another set of major protagonists in most merit-pay proposals, also have doubts. According to Cramer, principals are wary of merit pay because they are responsible for determining which teachers get the bonuses (Cramer, 1983, p. 33). Understandably, they are apprehensive about creating personnel conflicts and do not want to appear biased towards one teacher and against another. Finally, teacher unions traditionally have opposed merit pay because they feel it rewards only a few to the exclusion of many.

New management strategies emphasizing cooperation could be ineffective under a merit-pay system. The cooperation these strategies strive for would be in jeopardy in a merit-pay system because it puts teachers in competition with each other (Garms, 1986, p. 372). Yet cooperation is imperative in a school where learning depends on continuity between classes and grade levels and shared information between teachers, administrators, and schools. Moreover, perverse behavior, such as a teacher sabotaging another's work, may evolve in extreme cases.

More recently, the debate has shifted to discussion of school-based performance funding, a concept significantly different from teacher-based performance funding or merit pay. This chapter discusses merit pay, then explains the school-based alternative.

SCHOOL-BASED FUNDING

With these problems and the new emphasis on school-based management strategies in mind, school-based measurement emerges as a more feasible, effective, and fair approach. In many respects, measuring the school as a unit eliminates many of the shortcomings of merit pay for teachers. Because the school constitutes a more comprehensive part of a student's total education in comparison to a teacher's, it is more effective and appropriate to measure a school's contribution to a student's education. The possible destructive forces created by merit-pay incentives due to competition between teachers likewise are eliminated when the school is the unit of measurement. Instead, a school-based scenario could foster cooperation and teamwork among teachers. Theoretically, when teachers are competing against each other for greater earnings and prestige, they have little incentive to work together. When the entire school stands to gain, cooperation and teamwork will occur. Parents will participate in the process to help schools achieve a high merit rating, for the higher the school's rating, the better the school and their child's education is perceived to be. Thus, parents will use their time and resources to work together toward helping the entire school instead of merely fighting with each other over whose children will get a merit teacher. *A Nation Prepared* summarized the strengths of school-based measurement concisely and effectively:

> ". . . it is particularly important in a school setting to reward the entire staff for student progress. First, because it is difficult to measure the contribu-

> tion of individual teachers to student progress, and second, because it is important to provide strong incentives to the staff to work as a team on behalf of the students" (Carnegie Forum on Education and the Economy, 1986, p. 91)

Weighing the strengths and shortcomings of school-based and teacher-based measurement suggests that the former is the more appropriate approach (Garms, 1986, p. 371).

Implementation of performance-based funding of schools demands attention to many factors. Specifically, questions which need to be considered are as follows: (1) What are the psychological effects of incentives? What effects do incentives have on employees? 2) How can educational indicators be used effectively to measure success in schools? Why are multiple indicators necessary? (3) How can equity be ensured? (4) Why is there a need to develop a sense of teamwork and cooperation? How important is teamwork? (5) How will rewards be distributed? Who will make this decision? Without a solid understanding of these aspects of performance-based funding, a successful program may be unobtainable.

Some argue that teachers will not be motivated by financial incentives. The major flaw in this argument is its failure to demonstrate what makes teachers different from all other workers.

From a purely theoretical standpoint, incentives do elicit different behavior from those targeted. Abraham Maslow, in his well known works on human motivation, suggests a hierarchy of five needs: physiological, safety, human relationships, self-esteem, and self-actualization (Maslow, 1978, p. 80-95). Maslow believes that the lower needs must be satisfied to a degree before the next level may begin to be satisfied. Moreover, humans are motivated by moving toward higher levels of needs. Maslow's theory may be applied to schools. More specifically, incentive structures should allow for individual motivation in attempts to satisfy higher levels of needs. Principals, teachers, and students, like all other individuals, will respond to incentives.

Long-standing theories on productivity also lend theoretical support to performance-based criteria. F.L. Roethlisberger discusses the odd events of what are commonly known as the "Hawthorne Experiments," in which researchers repeatedly changed the physical environment at a manufacturing plant and noticed improvements in productivity with every change. The conclusion was contrary to what was originally hypothesized. The Hawthorne experiments demonstrated that individuals working in an environment in which they feel important, have positive feedback and interaction, and receive attention are more productive (Roethlisberger, 1978, p. 66-77). Other theorists have discussed motivation and reached similar conclusions. Rosenholtz argues that individuals are motivated to work productively as long as the inducements offered to them are as great as the contributions they are asked to make (Rosenholtz, 1989). Almost all motivational theories agree that both pecuniary and nonpecuniary rewards work. It is essential, therefore, to include both financial and psychological rewards in any performance-based funding system.

NEED FOR TEAMWORK

Improved and increased cooperation between teachers, administrators, and principals is fundamental in the development of performance-based funding systems. In fact, one of the primary advantages of school-based evaluation is that it promotes cooperation in schools. For this program to work, all participants must buy into it, agree on the criteria for evaluation, and decide upon award distribution scenarios. Teachers and principals will lend greater support to this program if they buy into it.

Bruno suggests that teamwork will lead schools to imitate a profit-sharing mini-corporation. "Racially isolated schools are turned into minicorporations with teachers given dividends or shares in the corporation based on overall school productivity. Dividends are added to salaries and are based on the marginal cost to the teachers" (Bruno, 1986, p. 442). Often, cooperation and new management-labor relations are cited as precursors for effecting positive school reform. Jerome Cramer, an expert on merit pay systems, has suggested that poor employee relations are a major cause of failure in such systems (Cramer, 1983, p. 33). Fredric Genck, the school-board president in Lake Forest, Illinois, and a management consultant, stated "Unless you plan carefully and include your entire teaching corps in an evaluation plan that helps it develop, your plan is doomed to failure" (Cramer, 1983, p. 33). Since teacher salaries represent a large part of school expenditures, teachers are commonly thought of as the most important factor in schooling. If teachers do not support the method of evaluation or recognize its validity, it most likely will fail. Thus, it is imperative that it obtain their approval.

Genck also comments on the tendency to implement a merit program from the top down, a practice he feels will be disastrous. "You can't develop a merit pay plan and push it from the top down" (Cramer, 1983, p. 33). Education is a human-relations industry, and human-relations considerations must be an integral part of any major policy change.

INDICATORS

Policymakers are increasingly using educational indicators in their evaluations of school systems. An education indicator is a performance measurement of one particular area in an educational system. There are many reasons for supporting the use of multiple indicators. Most importantly, multiple indicators give a balanced assessment of the performance of a student, school, or district. As Jane L. David suggests, "indicators should provide adequate measures of schooling deemed important and amenable to change through policymaking" (David, October

1987, p. 3). Standardized tests have been criticized for cultural bias against minorities and for failure to adequately assess critical-thinking, reading-comprehension, and problem-solving skills, and schools have been criticized for overly relying on standardized test results in the assessment of school success and failure. Test scores can be manipulated by discouraging lower-achieving students from taking tests or, in an extreme case, by altering test booklets. Teaching to the test is also a symptom of overemphasis on standardized tests as the sole indicator of academic achievement. As a result, educators and public policymakers, in an attempt to obtain a more comprehensive picture of a school or district, have turned to the use of multiple indicators. Using a portfolio of indicators halts the tendency to concentrate on only one aspect of education at the expense of others.

Several questions must be considered when using multiple indicators. The first issue is the simplicity of indicators. Since the public will eventually be the final judge of the effectiveness of a performance system, it is necessary that school officials be able to effectively communicate exactly what the indicators suggest about the school. As a result, as Mark Fetler suggests, "it is necessary to presume little mathematical sophistication" in using indicators (Fetler, 1986, p. 31). Second, indicators should not be limited to standardized tests. The following are examples (by no means limited) of indicators which might be used:

1. rates of attendance,
2. percentage improvement in rate of dropouts,
3. percentage of students satisfying specified academic course requirements,
4. percentage of students meeting requirements for state universities,
5. percentage of students enrolled in second year of four-year institutions,
7. percentage of students graduating from four-year institutions,
8. percentage of students graduating,
9. percentage of students reading at grade level or above, and
10. percentage of students enrolled in two-year institutions.

Of course, many other possible indicators exist for each school system and grade level (see, for example, Texas Select Committee on Education, December 1988; and Garms, 1986). These should be adapted as needed. Indicators should reflect factors deemed important by the individual schools, district, or state. This is the third assumption: each individual district or school, in addition to using indicators for all schools, should be given the authority to decide upon locally determined criteria to reflect local priorities. Indeed, the process of choosing the appropriate indicators will in itself serve as a catalyst for discussion of goals and priorities of the school, district, and nation. Use of these indicators could help demonstrate improvement in certain priority areas designated by the local school board or other agency. Fourth, schools must agree upon consistent definitions of indicators. For example, dropouts can be defined as students who started as freshmen four years ago, who are not currently enrolled in the school, who have not graduated, and who have not transferred to another school. Agreement upon these four tenets is a necessary step in creating a merit-based funding program for schools.

Garms (1986, p. 377) gives the following criteria for use of every measurement indicator:

1. It must be reflective of the desired outcomes.
2. The outcomes must not only be desired, they must be important.
3. The attribute to be measured must be susceptible to accurate measurement on some quantifiable basis.
4. People must be convinced of the validity and reliability of the measure as an indicator of the desired outcome.
5. Attainment of merit, based on the measure, must be equally possible for every school, regardless of how well it is currently doing in the education process or of the kind of student body it serves.
6. Performance meriting an award in one year should not diminish the possibility of receiving one in the following year.

Two other aspects are vital in the implementation of performance-based funding. First, merit funding should be allocated on the basis of improvement, not simply on discrete measurements. Second, equity and equal opportunity must be ensured, otherwise, already existing problems will just be exacerbated.

DISTRIBUTION OF REWARDS

If pecuniary awards are to be given to schools simply on the basis of the level of performance, most, if not all of the money, would go to suburban and wealthy school districts. The poor and minorities would, in effect, be unable to compete because of the classic and well-documented problems that predominantly minority and poor schools experience. Thus, awards should be based on improvement. When measuring improvement, it is important to measure in terms of proportional improvement over time. Use of percentages allows for comparison between two schools at two different levels. Thus, for an innercity school with 30 percent of its students at four-year institutions to show a 10 percent improvement in one year, it would have to increase this indicator to 33 percent. For a suburban school to demonstrate a 10 percent increase, the percentages might need to change from 80 percent to 88 percent.

Equity is also an essential ingredient in performance-based funding. While the use of percentage improvements allows all schools to be eligible for awards regardless of standing, socioeconomic status (SES) must be considered. This consideration is especially important if performance-based funding is to improve the status of minorities throughout the educational pipeline. For an educational system to meet society's needs it must provide an equitable education for all. One possible approach in attempting to guarantee equity is indexing the average SES level and incorporating this index with the other indicators. In California, for accounting procedures (the schools are ranked), schools are divided into five groups on the basis of an index of parent occupation. Then, schools are ranked only against those with similar SES levels. "This method avoids pitting low and high socioeconomic schools against one another in the computation of percentile ranks, and it is easy to communicate" (Fetler, 1986, p. 33). A similar method could be used in merit funding.

CREATING AN INDEX

One method of combining educational indicators is constructing an index. An index allows school officials to accomplish several important objectives and enables the user to combine several attributes into one composite measure. This measure, for our purposes, could be used as the criterion for allocating funds to deserving schools. In addition, using an index helps to ensure equity by creating a norm-related scale of performance. Thus, a school with a low index score can improve 10 percent on the scale more easily than another school with a much higher starting point can. Through this approach, "a school's past performance is the frame of reference for interpreting change" (David, 1987, p. 5). Further, the importance of each indicator to the school or district can be reflected by giving "weights" to the indicators when producing the index.

In order to facilitate better understanding of the use of an index, a simple example can be constructed. Elizabeth O'Sullivan and Gary Rassel outline the three important steps in developing an index. These are (1) selecting the items to be included in the index, (2) combining the items to form an index, and (3) weighing the separate items (O'Sullivan and Rassel, 1989, p. 252).

Selecting Appropriate Indicators of School Performance

Indicators can be selected from a top-down or bottom-up approach. More specifically, a top-down approach would indicate state- or nationally selected indicators; a bottom-up approach would suggest locally selected indicators. The best-case scenario would be to use a combination of the two. By doing so, local, state, or national priorities can be assessed.

State X has adopted the idea of performance-based funding and has two objectives: to increase the completion rate and to raise SAT scores. District A has committed to the performance-based funding process and wishes to include the district's objectives in addition to the state's. The school board has decided that increasing the,number of students who obtain post-secondary education is the number one priority. Two indicators will be used in order to gauge progress of this local priority: the percentage of students meeting the curriculum requirements for state universities and the percentage of graduates who enroll in post-secondary institutions. Thus, the index will appear as follows:

$$\text{INDEX} = f(\text{COM}, \text{SAT}, \text{CUR}, \text{PSI})$$

where

COM = graduation rate

SAT = average combined SAT score

CUR = percentage of students meeting the basic curriculum requirements for the state's universities

PSI = percentage of graduates who enroll in post-secondary institutions

Note that the range of these indicators could vary considerably in value and form. As a result, a mechanism to effectively compare and standardize the four indicators is needed. This also is a relatively easy task.

Combining Items to Form a Standardized Index

O'Sullivan and Rassel propose using a norm-related tool to aggregate the indicators into a meaningful index. First, assign the measurement indicating the greatest need the number 100. Next, assign the value indicating the least need the value zero. In my example, I created a hypothetical goal for each indicator, and assigned this goal the value zero. The reasoning for creating this hypothetical goal and assigning it the value zero is as follows: since the index will be used to gauge improvement in schools, there should always be room for improvement. Without utilizing a hypothetical goal, the school which performs best in each area measured will be the school setting the norm. In other words, schools at or near the best school will have no room to improve. Creating a hypothetical goal and using it as the norm-setting criterion allows all schools to be recognized for improvements.

We now have the parameters of the index. In each measured category, the standardized value zero (0) represents the goal, while the standardized value 100 represents the school that measures the worst. The value for each data point in between can be determined by the following formula (for each indicator):

$$X = \frac{(YA - Y)}{(YA - YB)} * (100)$$

where:

X = standardized value to be created for each school

Y = value of specific measure of each school

YA= value indicating the least need, or the established goal

YB= value indicating the greatest need (O'Sullivan and Rassell, 1989, p. 266).

Thus, in this index, all schools want to reduce their standardized value for each indicator. The last step of the process is to create an aggregate standardized value; schools will work towards reducing this aggregate index as well.

Consider the percentage meeting curriculum requirements for state universities as an example. Also assume that there are four high schools in the district, Lincoln, Jefferson, Washington, and Taylor. Taylor, the school with the greatest need in this category, has 46 percent of its students meeting the appropriate curriculum requirements, while Lincoln, the best, has 84 percent. Fifty-four percent of Washington students met the required standards. Moreover, the local school board, after consultation with teachers and parents, has decided that the goal of the district is for 90 percent of the students to meet the necessary requirements for the state university. Thus, Jefferson, which has a 72 percent rate, would have the following standardized value:

$$\text{Jefferson standardized}(x) = \frac{\text{Goal - Jefferson rate}}{\text{Goal - greatest need}} * 100$$

Thus, Jefferson would receive an indexed score of 40.91. Scores for the other schools will be decided in the same manner. The results are as follows

Lincoln	13.64
Washington	81.82
Taylor	100.0

Similar calculations will be executed for each variable utilized. If each variable is viewed as equally important, the standardized scores for all of them will be averaged, creating a composite index. If certain variables are seen as more important than others, they should be weighted accordingly.

Weighting the Separate Items

The school district proceeds to rank and quantify the importance of each indicator in relation to the other indicators. For example, if the district feels that their priorities (CUR & PSI) are twice as important as the state's (SAT & COM), they would simply multiply the coefficient two (2) by standardized score for the locally prioritized indicators. This creates a weighted composite index. Namely, the formula for the composite index is:

$$\frac{(\mathrm{WEIGHT}_i)(\mathrm{VARIABLE}_j)}{(\mathrm{WEIGHT}_i).}$$

The amount of difference between the weighted index and the nonweighted index depends solely upon the weights and the data used. In the fictitious example presented below, we see the results presented in Table 8. Although the differences between the two indices are not great, they do reflect some change as a result of the weighted priorities.

It is important to note that this is a very limited example. Other indicators should be used as appropriate. If information is available, socioeconomic data should be integrated into the index, as Mark Fetler has done for California (Fetler, 1986, p. 33).

Table 8. Difference between Weighted and Nonweighted Indexes

School	Nonweighted Index	Weighted Index [1]
Lincoln	35.45	30.18
Jefferson	67.78	63.55
Washington	80.00	80.22
Taylor	92.36	94.91

[1] Local variables are twice as important in this example. Thus, the formula is:

COM + SAT + 2*PSI + 2*CUR)/6

REWARDS

The main requirement for rewards is that they be meaningful and large enough to serve as real incentives. There must be a balance between the number of categories of recognition and the size of the awards. As Fetler suggests, the greater the number of categories of recognition, the more opportunities for rewards exist. Alternatively, increasing the number of available rewards tends to diminish the importance and meaning of each award (Fetler, 1986, p. 39). The means of distribution of the rewards in a school will have a major impact on the success of a program. Garms suggests that the more freedom to manipulate the extra money from an award, the better. With such freedom, teachers will "believe that they have the means to make the school more effective" (Garms, 1986, p. 389). The Texas Select Committee on Higher Education evidently realized the importance of letting the school decide how to use award money. In fact, a recent policy paper even recommended that a committee of teachers and administrators, with teachers having a two-thirds majority, make the decisions on the distribution of award money (Texas Select Committee on Education, December 1988, p. 7). Another important aspect of the criteria for the rewards is that all schools must have the opportunity to be awarded.

Award money can be allocated based on proportional gains of the composite index. Thus, if a school's composite index improves from 80 to 72 over one year, it would be eligible to receive reward money associated with a 10 percent improvement.

Allocation of awards by the district or the state must not be based solely on norm- related criteria, nor on how one school performs compared to all other schools. For example, if all schools in a district improve, all schools should receive some award, not just those who improve the most. Such a practice will avoid the tendency toward greater honor for those selected, but a sense of "futility for those not selected" (Fetler, 1986, p. 39).

OBSTACLES AND CAVEATS

There are many serious obstacles to the establishment of an effective performance-based funding system, but I believe each can be overcome. The first obstacle this initiative faces is the lack of a sophisticated data base. When created, it should have the ability to maintain and organize both national and state information. Large data bases would permit top-down data analysis of indicators. As previously mentioned, it is essential to have national or state data to serve as a base for norm-related comparisons. In addition, local communities should develop data management systems capable of processing relevant district or school level data. This system would allow administrators to monitor indicators at a local level, enabling them to include regional priorities. In fact, no such data base capable of utilizing education indicators currently exists, even at the state level (Texas Select Committee on Education, December 1988, p. 6). If indicators are to be used, a large data base, with consistent definitions and agreement on indicators, is a requisite. Without a data base, effective comparisons of improvements in schools are virtually impossible. Creating such a data base will require a significant amount of money, as well as cooperation and interaction between states, districts, and schools.

Another concern is whether or not an effective funding formula is possible. Performance-based funding should be allocated on a value-added basis. The largest portion of school funding should continue to be based on attendance and other factors. The important amelioration is the remaining portion of school funding, which should be rewarded on a value-added basis. Schools that perform well should, as a reward for improvement, have extra funding to be allocated at their discretion.

A successful funding formula should include the following. First, SES levels must be incorporated into the funding formula. Fetler's indexing approach, as used for accountability analysis in California, is a reasonable means of ensuring that demographic factors be considered. Second, all schools must have the opportunity to receive rewards, regardless of the performance of other schools or starting points. Without an opportunity for all schools to win, incentives will only work for a few select schools. Third, the rewards should not be based on the idea of equal spending per pupil. Different students have different needs, and equal funding for unequals only perpetuates inequality. Finally, the funding system must not prevent a school which improved the previous year from receiving a subsequent award. The concept of value added must be based on improvement, and there can be no limits on improvement.

The possibility of perverse incentives is yet another obstacle. A *perverse incentive* is one which creates perverse behavior. For example, overemphasis on standardized tests in a funding system tied to performance may result in teaching to the test or discouraging low achieving students from taking the test, all in pursuit of additional revenue. Adam Urbanski has seen such behavior in Rochester, New York, and explains, "now instead of testing what we teach, we are teaching what we test" (Urbanski, 1989). The use of multiple indicators for evaluation is one preventive method which will be effective in avoiding perverse behavior. If many indicators are used, it will be very difficult for a school to concentrate on only improving in a few areas without adversely affecting others. This will be even more true the more often measurements are taken. For example, if a measurement is taken only in the fifth grade, a school may target better teachers and more resources towards that grade and use less effective teachers in the fourth grade. Measuring in both the fourth and fifth grades will eliminate this phenomenon. Using the school as the measurement unit is another safeguard against such behavior. With merit pay for teachers, teachers in extreme cases may sabotage other teachers' efforts in order to improve their own standing. Perverse behavior may be avoided with school-based measurement, if implemented effectively.

Performance-based funding has by no means gone unscathed by criticism. One criticism is that teachers will not be responsive to financial incentives. Although this criticism has been decisively discounted, it raises an important consideration, namely: the idea of nonpecuniary rewards. Nonfinancial rewards should be incorporated into any performance-based system. Again, the specifics should be decided at a local level. Edward Wynne suggests that a simple school recognition system may be effective (Wynne, 1984, pp. 85-93). Recognition could include advertisements in a newspaper or ceremonies, in addition to the previously described financial rewards.

CONCLUSIONS

New initiatives in education, such as performance-based funding of schools, are now politically feasible because of growing concern about education as well as a new interest in performance management in the public sector. Policymakers and educators often cite the need to reinvigorate the system to facilitate more learning. Performance-based funding can re-energize the American educational structure, methods, and practices. Performance-based funding is both appealing and politically feasible; conservatives and liberals, Republicans and Democrats, have displayed interest and approval in such reform.

The approach to this initiative must focus on the root of the problem, the incentive system in schools. Under the current enrollment-based funding formula that most schools employ, neither teacher classroom performance nor productivity is considered in salary evaluation. This formula offers no incentive for schools to improve. School performance and productivity should be considered in school-funding formulas. Those that perform well should be rewarded for their work. To measure a school's contribution to a student's education, one can use a multiple indicator system aggregated by an index. Moreover, because it is possible to assess a school's impact on students' progress, the school, not the teacher, should be the measured unit. Cooperation and teamwork will flourish under a school-based management system, because all participants have an opportunity to gain.

Advance consideration of possible pitfalls will improve the chance of success in implementation of performance-based funding. Specifically, funding should be based on improvement. All schools must have the opportunity to win an award, and the number and size of the awards should be balanced and reflect the goals of the state, district, and school. Finally, the socioeconomic levels of the students must be incorporated into the funding formula.

Admittedly, there are imperfections in this program, yet the benefits far outweigh the costs. For the nation to continue to be competitive in the world economy, change in our educational system must take place. Performance-based funding is one such change, and, if thoughtfully designed and cleverly implemented, it will improve the education of our nation's youth.

Chapter 10. Choice in Minnesota: Open Enrollment as a Means of Educational Reform

by

Jill S. Wicinski[*]

AN INTRODUCTION TO CHOICE

The publication of *A Nation at Risk: The Imperative for Educational Reform* by the U.S. Department of Education in 1983 brought the nation's attention to the declining conditions of the American education system. The need for educational reforms was recognized nationally, especially among minority populations, and the types of reforms necessary became the focus of much-needed debate.

Debate occurred at the national, state, and local levels. Proposals for education vouchers and innovative programs appeared at the federal level. Most of the 50 states adopted some type of educational reforms. Included among these were early childhood education, new mathematics and science programs, and stiffer graduation requirements and teacher qualifications. While these reforms were directed at the substance of education programs, two other key issues under discussion were parental choice and the application of the "free-market" economic model to schools (Hoffman, 1985, p. 2369).

Since this discussion of school reform began, more than 20 states have passed or are currently considering legislation to expand choice within their public school systems (Education Commission of the States, February 1989a, p. 1). Choice programs are also being considered or implemented at the local level. But why is choice being promoted so strongly, and are there problems with such a plan? This chapter focuses on the reasons for choice, the types available, and the benefits and drawbacks associated with choice programs. A close description and analysis of a one program established in the state of Minnesota is then given. Minnesota's plan is of particular interest because it was the first in the nation to legislate state-wide open enrollment. More recently, the Minnesota program has received national attention as the publicity about the choice movement increases. Conclusions are then drawn about the effects of open enrollment in Minnesota and the reform option of choice as a whole.

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Why Choice?

The reasons for choice vary and also have different ideological bases. Some view choice as an avenue to increase a student's options in course selection, while others view it as a means to promote equity through desegregation. However, the major proponents of choice believe that it will dramatically improve the quality of education delivered to American students.

According to a recent study of American high schools by John E. Chubb of the Brookings Institution and Terry M. Moe of Stanford University, the quality of schools makes an enormous difference in the educational achievement of children of similar background and intelligence. "The most effective schools," according to Chubb, "are those free of control of central bureaucracies and unions and run by strong principals who involve teachers in decisions" (Meisler, 1989, p. 22). Competition encourages this type of involvement and, as Chubb explained, "choice breaks the monopoly"(Meisler, 1989, p. 22).

Choice is also an appealing idea to both conservatives and liberals. Conservatives view the measure as a means to promote competition within the educational system, while liberals view choice as a means to give those of lower economic status the same freedom as the middle and upper classes. Parental choice is also supported at the federal level, for it is believed that choice can greatly affect the quality of public education without the need for federal funds (Fiske, 1989a, p. B-6). At the state and local levels, structural changes can be made within the existing framework with little additional funds.

Types of Choice Programs

In the early 1980s, the Reagan administration proposed voucher and tuition tax credits as a means to improve the education system. Congress never passed either proposal, in part because they feared that money diverted into private schools would undermine the nation's public school systems. As Mary Hatwood Futrell, president of the National Education Association, explained, allowing vouchers and tax credits to take money from public schools does not solve the issue of poor-quality education in the public schools. "You are depleting the funds for schools that are already in trouble" (Meisler, 1989, p. 22).

While some people still equate vouchers with choice, they are not the same. Vouchers allow public funds to go to private schools, while the current choice programs being supported and legislated involve parental choice among public schools, and only public schools.

There are two types of choice programs: interdistrict choice and intradistrict choice. *Interdistrict choice* means that the student may transfer to public schools in districts outside of the one in which his or her parents reside. *Intradistrict choice* means that students may transfer from the neighborhood school to another school within the district.

As of February 1989, three states had passed legislation promoting limited interdistrict choice. In California, students may attend school in another district if their parents work in that district, while in Iowa students are allowed to transfer to schools within their own or contiguous districts. Minnesota's program allows students to transfer to any district in the state that participates in the open enrollment program (Education Commission of the States, February 1989b, p. 1).

Intradistrict choice can be categorized into three types: controlled choice, teacher-initiated schools, and magnet schools. Controlled choice programs, such as the one in Cambridge, Massachusetts, foster two interrelated goals. It allows for the voluntary desegregation of the district's schools while strengthening each school by giving the staff responsibility for improving the quality of education (Education Commission of the States, February 1989a, p. 33).

Teacher-initiated schools, a second form of intradistrict choice, encourages principals and teachers to "find colleagues who share similar educational philosophies and interests and to work together to develop proposals for new schools" (Education Commission of the States, February 1989a, p. 39). If the school is approved by the district, the new options are made known to the families in the district. An example of this type of program in found in District 4 in East Harlem, New York (Education Commission of the States, February 1989a, p. 33).

A third type of intradistrict choice is magnet schools, which are operating in many cities across the country. Schools focus on specialties such as the arts or the sciences, and students from anywhere is the district who share that school's interest are allowed to apply (Education Commission of the States, February 1989a, p. 49).

The State of Minnesota opted to seek educational reform through the framework of an interdistrict plan. The next section explores how the reform movement grew in Minnesota and how the State of Minnesota moved toward its open-enrollment program.

A SHORT HISTORY OF MINNESOTA'S SCHOOL REFORM

As the education crisis received national attention in the early 1980s, many states, including Minnesota, began seeking specific educational reforms. The concern for improving the quality of education was not limited to the state government; private citizens and industry leaders took an active role in defining the problems and offering solutions. In 1982, the Citizen's League, a Minneapolis-based policy analysis group, published *Rebuilding Education to Make it Work,* which recommended basic structural changes in the methods for governing, organizing, and delivering educational services (Citizens' League, not dated).

Another group promoting change was the Minnesota Business Partnership (MBP), founded in 1977 and consisting of CEOs from Minnesota's largest corporations. MBP's purpose was to "help identify and analyze the state's longer range economic issues and to help set priorities and plans for action (U.S. Congress, Senate Committee on Governmental Affairs, 1985, p. 243). MBP believed education to be one issue that would have the most significant impact on increasing the economic prosperity of the citizens of Minnesota.

While Minnesota's schools have always done well relative to the rest of the nation, the performance of students in kindergarten through twelve, as measured by objective criteria, has been slipping. As a response to this problem, MBP commissioned BW Associates of Berkeley, California, to analyze the system's effectiveness and to make the necessary recommendations for improvement.

The November 1984 BW Associates' study found a long-term decline in the state's standardized test scores, increased remediation, and diminishing skills in problem solving, reasoning, and communication. One recommendation was to increase students' choice in grades 7 through 12 among elective programs and providers (U.S. Congress, Senate Committee on Governmental Affairs, 1985, p. 244).

When Minnesota Governor Rudy Perpich responded by announcing his "Access to Excellence" initiative on January 4, 1985, the program represented a fundamental change in basic state education policy. It was "both a cumulation of the state's education 'choice' movement and the beginning of a dramatic new phase" (Hoffman, 1985, p. 2370).

No longer would Minnesota maintain the traditional requirement that children should only attend the public schools in the neighborhoods where they live. Perpich's new "excellence agenda" contained several programs. The one which received the most attention was the Postsecondary Options Act, passed in 1985. The plan, similar to the one recommended by BW Associates, allowed 11th and 12th graders to leave their public high schools and take courses, at the state's expense, at either public or private colleges (Hoffman, 1985, p. 2370). This program utilizes the current resources of the postsecondary system to expand the opportunities available to secondary students without increased costs.

In the fall of 1985 approximately 1,500 of the 120,000 juniors and seniors in Minnesota's public high schools (approximately 1 percent) participated in the program. The state expected participation to increase, and everyone involved believed that the final result would be a better-educated citizenry (U.S. Congress, Senate Committee on Governmental Affairs, 1985, p. 100). The prevailing belief was that choice "can expand opportunities and bring about better achievement, better attitudes, and a better education for every student" (U.S. Congress, Senate Committee on Governmental Affairs, 1985, p. 109).

In May 1988, the Minnesota legislature expanded its innovative choice program by adopting an open-enrollment plan which included all public school students grades K through 12. This legislation was the first of its kind in the nation, giving parents the legal right to transfer their children to almost any public school they choose, including those public schools in other districts and in other cities (Worthington, 1988, p. 1)

The following is a summary of the subdivisions of Article 6, Section 8, of the Secondary Options Act of 1985 (School-District Enrollment Program—Minnesota Law 123.3515)):

> *Subdivision One* allows school districts with less than 1,000 students in grades K through 12 to be excluded during the 1989-90 school year.
>
> *Subdivision Two* states that the enrollment options program is established to enable any students to attend a school or program in a district in which the student does not reside, subject to limitations described in Section 8.
>
> *Subdivision Three* provides for district discretion in participating in the program. School boards may, by resolution, determine that nonresident students may not attend any of its schools.
>
> *Subdivision Four* outlines the pupil application procedures.
>
> *Subdivision Five* addresses the issue of desegregation plans. Districts with a state-approved desegregation plan may limit the number of students who transfer into or out of the district in order to remain in compliance with their plans.
>
> *Subdivision Six* outlines the procedures for processing a nonresident's application. Districts that do not exclude nonresident students must, within 60 days of receipt of the application, notify the applicant's parents or guardian in writing if the application has been accepted or rejected. If the application is rejected, the notification must state the reasons.
>
> *Subdivision Seven* outlines the basis for a district's decision on applicants. School boards must adopt the standards for acceptance and rejection. Acceptable standards include the capacity of a program, class, grade level, or school building. Standards may NOT include previous academic achievement, athletic or other extracurricular ability, handicapped condition, proficiency in the English language, or previous disciplinary proceedings.

Subdivision Eight provides for the waiver of established deadlines.

Subdivision Nine addresses the transportation of students. If requested by parents, the nonresident district is required to provide transportation within the district. However, the resident district is not required to provide or pay for the transportation from the student's residence to the border of the nonresident district. Parents may be reimbursed for that part if the student's family income is at or below the poverty level.

Subdivision Ten addresses accepting credits for graduation.

Subdivision Eleven addresses informing parents of the option.

Subdivision Twelve addresses the adjustment to general education aid.

The legislation also declares that Subdivision One is repealed on June 30, 1990. This, in effect, mandates that all of the state's public school districts participate beginning with the 1990-91 school year.

DISCUSSION OF THE MINNESOTA PROGRAM

Minnesota was not advocating unrestricted choice or the use of public funds at private schools. Instead, the program promotes structured choice for parents and students. How has the program fared so far, and what lessons can be learned from Minnesota?

The following sections consider several important issues concerning Minnesota's open-enrollment program. First, who is participating in the program and why; minority participation also is considered. Next, attention focuses on the funding structure and the potential for schools closing because of lost funding as students transfer out. Finally, the questions of outreach and transportation are considered.

Open-Enrollment Participants

Currently, the open-enrollment program is in a pilot phase. Participation of all public school districts will be mandatory in the 1990-91 school year. Until then, their participation will be voluntary; already, however, one-third of the state's 435 school districts are taking part, including Minneapolis and St. Paul, the state's two largest districts (Worthington, 1988, p. 28).

During the 1989-90 school year, resident districts with an enrollment of over 1,000 students may not prohibit students from leaving (Nathan, 1989). The legislation exempts certain districts (Subdivision Three). School boards may vote their districts "closed" to all enrollment-options students, or they can deny a transfer to a student wishing to attend school in their district due to lack of space in a grade-level, program, school, or district. Participation may also be denied if the acceptance of transfer students would cause the district to fail to comply with desegregation guidelines (Minnesota Department of Education, August 1988).

As of November 1988, the open-enrollment program was still in its beginning pilot phase; the state had only begun to collect data and had not yet begun to analyze it (Zohn, Interview, November 22, 1988). During the 1988-89 school year, 141 students from 95 districts exercised their open-enrollment option (Hunter, Telephone interview, March 24, 1989).

While there is no analysis of data on participation, Ms. Barbara Zohn of the Department of Education's Options Hotline, stated that those students currently participating are predominantly White and from middle-class suburbs. This is an important point to note, since many opponents of the program warn that it will benefit White, middle-class students while failing to serve minority and low-income students.

Zohn would not speculate as to why participants are mainly White, nor has the state's Department of Education sought to determine if this trend will continue once participation becomes mandatory. Again, this is an important point because as opponents predicted about choice programs, there are indications that transfers have been motivated by convenience rather that academic excellence (Worthington, 1988, p. 28).

As of January 1989, only 435 of Minnesota's 716,000 students had applied to change districts in the 1989-90 school year (Vobejda, 1989). While no one has hypothesized why participation is so low, Minnesota Governor Rudy Perpich was not surprised at this outcome:

> It takes a compelling reason for students to leave friends and neighborhood. Not many do. But under open enrollment, parents and students have the power and the leverage to choose another school. School districts are compelled to create a system of educational excellence because state revenues follow students wherever they go, and, after all, schools understand the bottom line (Perpich, 1989, p. A-17).

If the program participants continue to be from White middle-class suburban families, then a major question arises as to what effects, if any, the Minnesota program will have on minorities. However, conversations with various people at the state's Department of Education to learn about minority participation in the program produced little quantitative information.

It is important to remember, however, that the Minnesota program has specific rules regarding desegregation. As Governor Perpich points out, restructuring and choice initiatives, "under the guise of reform . . . can be used to reinforce prejudice, and to skirt desegregation, and to allow the expansion of private schools at the expense of public education" (Perpich, 1989, p. A-17). Restrictions are built into the program's authorizing legislation so that racial balance would not be disrupted and segregation prevented. However, if minority students are not participating, is anything being done to improve the quality of their education, especially in the Minneapolis and St. Paul school districts where Minnesota's minorities are concentrated? Minnesota has a minority population of approximately 7 percent, most of whom reside in Minneapolis and St. Paul. The term *minorities* here includes Blacks, Hispanics, and Asians. Excluded are American Indians because currently they are involved in separate sets of issues and policies. The state's minority public school enrollment is 6.5 percent overall, yet minorities account for 38 percent of Minneapolis' public school students, and 35.8 percent of St. Paul's (Minnesota Department of Education, 1988). No data could be acquired on the economic background of these minority students.

The original intent of this chapter was to examine the effects of this program on minority students enrolled in the Minneapolis and St. Paul schools. However, no data about these students and the open-enrollment program are available. More interestingly, no impact or prediction studies were done regarding the socioeconomic/ethnic characteristics of the students expected to participate; no one seems to know why. Still, one may look at the current demographics and go back after the program is fully implemented to learn what the enrollment shifts, if any, have been and why, and if this has improved minority access to quality education.

There were no data on the characteristics of students participating in the open-enrollment program. However, if the apparent current trend continues, and the participants are from predominantly one socioeconomic group, then policymakers must find out why. If low-income or minority children are not participating, then one must ask why, especially when opponents of the program have argued that upper- and middle-class parents are more likely to investigate transfer opportunities. As Steve Belton, president of the Urban Coalition in Minneapolis, explained, "Open enrollment assumes a level playing field, that everyone responds to change at the same rate. That's not true in communities of color" (Worthington, 1988, p. 28).

The general belief is that there will not be much movement by the public school students. The bottom line is that this is a choice program, and parents do not have to participate if they do not wish to (Zohn, Telephone interview, November 22, 1988).

One must also keep in mind that this is a state-wide program. It was not implemented specifically as a plan to help any one group. As Zohn explained, students in rural areas may benefit the most, since the program allows them to transfer from very small schools to ones with larger enrollments and more diverse programs (Zohn, Telephone interview, November 22, 1988). Even if the legal option of choice is seen as beneficial, what are the implications of a low participation rate in the program, and what are the problems resulting? Also, one must ask if choice will truly improve the quality of education delivered.

Where Students Go, State Money Flows

When one first considers open-enrollment programs, two questions regarding funding come to mind. First, how do state funds for each student follow him or her? Critics predict that the program will be bogged down in bureaucratic tangles (Worthington, 1988). Consequently, one must consider if the transfer of state funds will be complicated and if schools have been adversely affected by the loss of funds due to student transfers. Because public school funding depends mainly on property taxes, one hypothesis is that wealthier suburban schools could survive financially if some students transferred out of their districts. It then follows that poorer schools may not be able to remain financially healthy if they lose state funds because of transfers.

With the Minnesota program, the state's education subsidy of between $2,500 and $4,000 per year per pupil goes to the school in which the child is enrolled (Meisler, 1989, p. 22). While no one has publicly commented on the bureaucracy required to administer these subsidy transfers, the theory that schools can lose funds and eventually shut down may soon become a reality in the Minneapolis middle-class suburb of Westonka. The problems here began not so much because of poor-quality education, but due to lack of taxpayer support for a school system.

One must keep in mind that if this can happen in this middle-class area with a relatively strong tax base, what devastating effects could occur in poor, inner-city neighborhoods with a weakening tax base. The degenerating effect basically consists of a school district making necessary budget cuts, students beginning to transfer out because of the decline in services, and much-needed state funds following the students to their new districts. One wonders at what point the situation becomes critical and if anything should or can be done to control it.

In Westonka, 70 percent of the tax-paying residents do not have school-age children, and the residents defeated a property tax increase, which forced the school board in Westonka to cut $750,000 from its $12 million budget. The cut translated into the elimination of seven teaching positions as well as the elimination of funds for custodians, building maintenance, and teacher pay raises (Vobejda, 1989).

Some parents, worried about how these funding cuts will hurt the quality of the school system, have in turn exercised their right of choice and have applied to transfer their children to other school districts. Westonka school officials are now fighting to attract and keep the 117 students who have applied for transfers. The bottom line is that if all 117 students transfer, the Westonka school system will lose approximately $350,000 in state funds, thereby compounding its financial problems. Westonka Superintendent James L. Smith was quoted as saying, "It exceeds my worst nightmare. Whoever was promoting open enrollment did not foresee the kinds of compounding problems Westonka has faced" (Vobejda, 1989).

Lindy Purdy, a Westonka resident who has applied to transfer her two children, said that "this district is really going to be hurt. Even if they lost 20 kids, it's going to hurt. If they lose 100, it will be a disaster" (Vobejda, 1989). Purdy also pointed out that Westonka school officials have become much more responsive to the demands of the parents regarding the quality of their programs (Vobejda, 1989). However, parents still have to worry about the reality of the district's entering a cumulative degenerating cycle. The irony of this situation is that the school system is more than willing to meet parental pressure for improved programs, but the funds are simply not there due to a lack of tax-payer support..

A critical point for controlling this problem should be found, even though the scenario fits perfectly into the proponents' argument for choice. The threat of losing students is supposed to increase the school system's response to parents and improve the quality of education because the school system no longer has a captive audience. Peggy Hunter, who runs Minnesota's open-enrollment program, explained that because of the program, "for the first time, the state is focusing on the need of the student rather than the institutions"(Vobejda, 1989).

Although some school systems are disgruntled about the program and despite the relatively low participation rate, many superintendents describe the program as a success (Vobejda, 1989). However, the important question is whether if enrollment in the program is low, the quality of education will improve as school systems become responsive to parents and students or whether an argument can be made that even if enrollment is not very high, the simple threat of students leaving will be enough to cause the public schools to respond with higher quality education? Also, who will take care of those children left in the declining school systems where the political reality is that property owners refuse to support public education?

Outreach and Transportation

Funding is not the only serious issue facing an open-enrollment program. Two other significant issues are providing information to parents, and transportation for students who wish to transfer.

Regarding the information issues, Zohn of the Minnesota Education Options Hotline explained that local districts use various media, such as newspaper advertisements and articles, to inform their residents of this program. The state's Department of Education is also participating in the advertising. Current methods include printing the hotline's phone number on grocery bags and AFDC checks (Zohn, Telephone interview, November 22, 1988). However, this method appears to be a response to accusations that the state was not publicizing the program in minority communities (Worthington, 1988, p. 28).

The state is also in the process of setting up workshops around the state to inform parents about their legal right to choose their child's public school. They will also distribute brochures on how to go about choosing a school (Zohn, Telephone interview, November 22, 1988).

It is important to note that the state Board of Education will not rank or rate the public schools. This is a very subjective issue, and the board sees its role as informing parents about the options available. Again, the point must be raised as to whether parents will have adequate information to make informed choices.

Transportation is another problem. The Minnesota legislation (Subdivision Nine) states that the nonresident district is required to provide transportation only within the district. The resident district has no requirement to provide or pay for the transportation to the border of the nonresident district. While the state will provide transportation reimbursement to families below the poverty level, I was unable to learn if families have taken advantage of this provision. If parents and students are to have a choice, equity requires that transportation be provided.

CONCLUSIONS

Open enrollment and other public school choice programs are heralded as beneficial reforms that will increase parental choice and foster competition to improve the quality of the public schools. To quote Minnesota Governor Rudy Perpich, "the positive spinoffs of choice are many, including more exciting opportunities for teachers, greater support for school levy referendums, better administration of our schools, and higher quality education for our young people" (Perpich, 1989, p. A-17).

However, Albert Shanker, president of the American Federation of Teachers, summed up the reality of this reform movement in saying, "I think choice potentially could be a very positive thing. But the idea that it can solve everything is nonsense. For years we had many manufacturers making many automobiles in this country and we had an awful lot of lemons" (Meisler, 1989, p. 22).

Shanker's skepticism is understandable, given the issues discussed in this chapter. To begin with, participation thus far has been low, although proponents argue that it is not how many students participate, but that the simple threat of transfer will cause schools to improve the quality of education. If schools are responsive, the program will be a success.

While the choice program seems to be praised by almost everyone, there are some major flaws in the argument, and some potentially harmful effects. First, the idea that choice will cause schools to improve the quality of education implies that the schools currently have the resources to provide quality education but simply have not been motivated since they have had a captive audience. In many school systems, the reality is one of necessary cutbacks due to scarce financial resources. As evident in the Westonka, Minnesota, example, a school system simply may not have the resources to improve the school. This is not meant to imply that increased financial support is the only means to achieving higher quality education. Rather, one must focus attention on the schools that are losing students. Another issue is what will be done if some students are unwilling or unable to transfer. Will our society simply sit back and say that it was their fault that they did not exercise the choice they had? Our nation is not in a position to allow segments of the society to be uneducated. Consequently, one cannot simply assume that "the market" automatically will correct the current problem of the lack of quality public education.

Second, the idea of choice assumes equal information and equity in movement. This is not always so. Minnesota has addressed the outreach issue somewhat, but still one wonders if the reason minority students have not transferred is because their parents did not receive or did not understand the information concerning their options. This potential problem must be investigated so that these students are not left by the wayside, receiving a poor education.

Also one must consider what will happen if some parents—whether minority or nonminority—simply do not care about their children's education? Given the recent decline in U.S. world economic competitiveness, this nation cannot afford to let society as a whole suffer as a result of a less educated citizenry which resulted from parental choice being seen as the prime solution.

Equity in movement is assumed in the choice program, but one must wonder if this is really so, especially for low-income families. While the state will provide transportation reimbursement to families below the poverty line, one wonders about those families who are just above the poverty line but who may have to rely on the poor quality neighborhood school because the cost of transporting their children to another district's line is more than they can afford. Again, are we to make no other efforts for the children, who because of the transportation issues, must attend their neighborhood school?

Minnesota's innovative leap into education reform is a brave step that must be recognized and applauded. However, before programs like this are legislated in other states, careful scrutiny must be given the basic idea of choice. We must question if the basic free-market assumption that competition will improve quality really applies to public education, since academic excellence may not be the reason for some transfers and because school systems may not have the funds to respond effectively to parental demands. The choice initiative is being praised more and more, but our society must go beyond the simple explanation and more seriously question the idea of choice. This step must be taken because, as seen in the Minnesota example, choice and the effects of choice, especially for minority students, may not be the simple solution it is publicized to be.

Chapter 11. Coordinating Social Services: The Role of Schools

by

Jill M. Ehrlich*

INTRODUCTION

As economic activity increasingly takes place in an international market, our nation's lack of economic competitiveness is generating considerable public debate and concern. Much of the current discussion is focused on better preparing and educating our future workforce, and our high rates of school dropouts are gaining widespread attention. America's school dropout rates are triple the rates found in Japan and West Germany.

Our school dropout rate has remained consistent for the past two decades; however, the consequences of dropping out—to the individual as well as to society at large—are more serious today than ever. Structural changes in our economy have made it more difficult for dropouts to obtain gainful employment and have widened the earnings gap between dropouts and high-school graduates. It increasingly difficult for school dropouts to break out of the poverty cycle.

In the face of the new economy, policymakers and educators are struggling to find effective approaches to keep youths in school and improve their achievement. Ever since the publication of *A Nation at Risk* (U.S. Department of Education, 1983), educators and planners have sought to develop and implement strategies that would improve the nation's schools. Coordinating community services to address the growing number of at-risk students is one such effort that has proven to be successful in many environments. The term *at-risk* is broadly defined to include students who are at an educational or societal disadvantage due to any of a number of reasons, including low socioeconomic status, limited English, learning disabilities, drug or alcohol abuse, lack of role models, and teen pregnancy.

This chapter addresses the potential role of schools in responding to our children at-risk, specifically by coordinating social services. It first discusses theoretical studies on coordination and then focuses on the practice of coordinating services in schools, comparing several different models of coordination currently in place.

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What is Coordination?

Coordination exists in many different settings and to various degrees. In order to evaluate its use in schools, let us begin by defining the practice of coordination in general. The authors of *Coordinating Human Services* define *coordination* as "the articulation of elements in a social-service delivery system so that comprehensiveness of, compatibility among, and cooperation among elements are maximized" (Aiken et al., 1975, p. 9). At the client level, coordination may be defined as a "client-centered, goal-oriented process for assessing the need of an individual for particular services and [providing] those services" (Hahn et al., Fall 1988, p. 2). Generally, coordination is a process of service delivery that connects existing services to ensure personal, holistic, and accountable care to its clients.

Many studies have demonstrated that fragmentation of human services leads to ineffective and inefficient service delivery. In response, several efforts have been made to integrate local services, shifting the focal point from individual service providers to integrated systems of agencies which provide a broad range of services. The rationale underpinning this movement is that clients benefit from collective efforts while costs are lowered by preventing duplication of services.

Why is Coordination Necessary?

Approximately 25 percent of students who enter the ninth grade, or about one million students, drop out of high school each year (Justiz and Kameen, 1987, p. 380). In most large cities the dropout rate is estimated to be anywhere from 40 to 60 percent. In addition, one million students who do graduate from high school are unable to read or write (Orr, 1987, p. 7). The majority of these teens are minorities from poor families. Approximately 50 percent of minority students drop out of school compared with only about 20 percent for Whites. Twenty-two percent of low-income students drop out of school, compared to only 7 percent of students from middle-to-upper-income families. Forty-two percent of Black dropouts are unemployed and 37 percent of this group live below the poverty line (Orr, 1987, p. 7).

Many studies confirm that the dropout problem results from a complex set of circumstances that are not entirely school related (Hahn, et al., 1987, p. 3). Coordinating services in schools has the potential to simultaneously attack many problems throughout a child's education—starting in preschool with such programs as Head Start and continuing as necessary until completion of high school. Students spend a large portion of their time in schools, and schools are central to their lives. Schools are also located in neighborhoods everywhere. Providing social services to students through programs linked with schools increases the likelihood that students' needs will be met and increases the likelihood of retention and graduation.

Without a high-school diploma or GED certification, it is difficult to obtain a job that provides a reasonable income. Significant transformations are underway and use of advanced technology in the workplace is increasing the skill requirements for many new jobs. These changes are most apparent in our nation's inner cities where high-paying, unskilled industrial jobs have disappeared. Unemployment and extreme poverty are soaring in many pockets of our inner cities. At the same time the urgency of our federal deficit, coupled with the "new federalism" and shifting fiscal priorities of the Reagan years, has left limited federal funds available to provide needed services for these high-risk areas. Due to these economic and political realities, the idea of coordinating social services is no longer just palatable but in many cases necessary.

Many scholars attribute the burgeoning underclass in our society to structural unemployment and its consequences. Although the term "underclass" is defined differently by many people, William Julius Wilson, in his book *The Truly Disadvantaged,* states that "regardless of which term is used, one cannot deny that there is a heterogeneous grouping of inner-city families and individuals whose behavior contrasts sharply with that of mainstream America" (Wilson, 1987, p. 7).

The growth of the underclass, in light of our country's shifting demographics, threatens the future stability of our workforce. By the year 2000, demand for employment will outweigh supply. At the same time, skills for employment are expected to be much more advanced. The U.S. Department of Education estimates that at this time, potential employees will need to complete approximately fourteen years of schooling in order to secure relatively stable employment.

The growing number of unemployable Americans is due in part to our schools' lack of care and support for at-risk students and their resulting inability to graduate large numbers of these students. Adverse physical, social, and economic conditions inhibit learning for many students. Our schools must transcend their traditional roles and begin to address the many sources of the dropout problem.

James Comer believes that the "failure to bridge the social and cultural gap between home and school may lie at the root of the poor academic performance of many . . . children" (Comer, 1988, p. 43). A child's development—in social, moral, linguistic, cognitive, emotional, and psychological areas—mainly comes from the family before a child enters school. If these characteristics match those which are valued in the school, they will be reinforced and accepted. However, if they do not, a child will become confused and subject to behavioral problems, poor performance, and alienation. Children who come from families which suffer from chronic unemployment and welfare dependency are likely to receive conflicting messages from their home and school environments.

Comer and Wilson also have noted the close connection between the changing nature of many communities and the growing chasm between the "haves" and the "have nots." Stabilizing institutions, such as community centers and religious organizations, are no longer an influential force in these communities.

Who is responsible for children when they can not receive adequate preparation, guidance, and support from their families or communities? As demonstrated in following sections, many communities are coming to rely more on schools to fill this role. The next section, however, explores the variables which constitute successful and problematic coordination efforts.

COORDINATING SOCIAL SERVICES

In theory, coordination seems to be both effective and efficient because clients are not only provided with holistic, accessible treatment, but costs are cut by reducing service duplication. In practice, however, efforts of this kind may be unproductive and difficult to implement. Many people have identified factors which determine the success or failure of this model.

Most fundamental is the extent to which all necessary services are available and accessible to the client, or the *comprehensiveness* of the system. This includes the flexibility of the system to incorporate new technology or new client needs into its existing structure (Bayer, 1985, p. 6). *Compatibility* among components of a system is a second element determining the success of a coordinated system. Established mechanisms and techniques should simplify coordination and provide an organizational framework for all elements of the program (Bayer, 1985, p. 7). The relationship among the separate entities of the network is a crucial determinant of overall success. *Cooperation* among the agencies is a third consideration because conflict can adversely affect the delivery of services (Bayer, 1985, p. 8).

Problems encountered in coordinating services can be categorized as those which pertain to internal processes or external production. When several parts are integrated into a network, all parts of the system affect the outcome. So in a consolidated human service system, the quality of service delivery is contingent upon every part of the system (Bayer, 1985, p. 3).

Bayer illustrates his theory through study of an integrated social service delivery system in rural northern Minnesota. Based upon extensive interviews with participating agencies, he describes cooperative, neutral, and conflicting relationships among the agencies and discusses the primary factors which determine these relationships.

In cooperative relationships, agencies work together to reach mutually important goals. Several factors contribute to cooperative relationships, but three appear most important. First, the entire system should have a similar professional ideology, manifested in similar training, procedures, and techniques. Second, everyone in the network should have a clear understanding of one another's specific roles, and competition among the participating parties should be avoided. Third, agencies should have minimal dependence on each other, yet they should build on each others' strengths and experience by sharing information and resources (Bayer, 1985, p. 11). The personnel interviewed for Bayer's study believed that a sense of common purpose and positive feedback from the community contributed most to productive interagency relationships (1985, p. 15). According to Bayer, a neutral relationship is one in which organizations work together on goals which are not necessarily shared but do not interfere with each other or with interagency relationships (1985, p. 8).

Organizational networks can experience several degrees of conflict. Insignificant conflict can occur even in cooperative relationships and is usually situational in nature (Bayer, 1985, p. 16). Moderate conflicts are usually at a personal level and can be counterproductive. When friction exceeds moderate levels, the entire interagency network is defined as conflicting. Conflict at the highest levels occurs between one or more agencies in a system due to many factors including insufficient communication and differences in goals, expectations, orientations, values, training differences, and financial concerns (Bayer, 1985, p. 8). In Bayer's study, respondents most often attributed high levels of conflict to personal ambition, poor communication, finger pointing, and divisive discussion. The ability to manage conflict is an obvious determinant of any system's success (Bayer, 1985, p. 9).

Another study stressed the significance of interagency relationships in the overall success of service delivery. Benson et al. cite four critical elements which affect these relationships: domain consensus—understanding roles and functions; ideological consensus—service goals and methods; interorganizational evaluation—attitudes toward other agencies; and work coordination—the nature of work interaction (Benson et al., 1973, p. iv).

The underlying concern in all of these issues is survival. Individuals and agencies both experience these concerns when position, responsibility, ideology, and resources are threatened. According to this study, enhanced interagency relationships are the key to avoiding problems associated with "turfism."

Three important measures of interagency relationships are the extent of interaction, program articulation, and the flexibility of relationships (Benson et al., 1973, p. 20). Interaction is measured by the extent and type of communication and contact. Measures of articulation include reasons for referral, satisfaction with referral response, and the level of knowledge about other programs (Benson et al., 1973, p. 16). Flexibility is the ability to avoid excessive rules and procedures which often mire relationships between parties and have a negative effect on provided services (Benson et al., 1973, p. 17). The likelihood of any of these problems surfacing depends upon the type of program in operation and the extent to which its components are coordinated.

Examples

Research for Better Schools, Inc., initiated a study for the Governor's Office of Policy Development, the Pennsylvania Legislature staff, and the Pennsylvania Department of Education. The study reviewed three separate coordination efforts across the state: early intervention for handicapped children in preschool, student assistance for drug and alcohol abuse and other teen problems, and teen pregnancy and parenting. Each program faced unique difficulties based upon the nature of the services provided (Firestone and Drews, 1987, p. 2). Two major problems identified by the study were interagency conflict and service blockages. These problems are independent of one another because conflict does not necessarily constrain service use and service blockages often occur in the absence of conflict (Firestone and Drews, 1987, p. 3).

The Pennsylvania Department of Education's Teen Pregnancy and Parenting Program encourages pregnant and parenting teens to complete high school. Depending on the location of the program, participants receive a broad range of services: necessary course work for graduation, plus tutoring if necessary; individual and group counseling; classes on parenting and health education; in-school day care; and career counseling and vocational training. Health care also is provided by either an in-school team or by referrals. Comprehensive records which document the services requested and received are kept on each participant (Firestone and Drews, 1987, p. 12).

The most common problem in this type of program is service blockage. In many instances clients receive insufficient services (mostly in prenatal care and nutritional education) due to difficulties in transportation and limited service capacity (Firestone and Drews, 1987, p. 13). Regulations also create service blockages in this area. Some regulations under the Job Training Partnership Act (JTPA) forbid the use of funds to serve pregnant teens. In some communities it is illegal to carry a baby on a school bus, which prevents many girls from using the day-care facilities in schools. Also, the program does not operate to full capacity because the local Welfare Department does not require that parenting teens attend school (Firestone and Drews, 1987, p. 14). Another aspect of the service blockage problem is treatment philosophy. Many community agencies refuse to treat pregnant teens and others only provide limited services. Community opposition also has created some barriers to full service utilization.(Firestone and Drews, 1987, p. 16).

The Student Assistance Program experienced both interagency conflict and service blockage. Typical projects of this type consist of one or more of the following: local drug and alcohol treatment and prevention programs; social work; counseling; psychological analysis and treatment (Firestone and Drews, 1987, p. 18). Interagency conflict appeared at all levels between local and state agencies, project staff, school administrators and school board, and community members. Survival concerns surfaced due to a high incidence of competition between service agencies for autonomy and funding (Firestone and Drews, 1987, p. 21). Involved parties also dissented over treatment philosophy. Basic ideological differences existed between those who wanted to treat the substance abuse itself and those who saw these problems as symptomatic of other personal problems (Firestone and Drews, 1987, p. 19). Service blockage also occurred due mostly to the limited service capacity of the community. Sometimes services were available but were unknown to the counselors. Other times services were available, but only to certain clients due to strict rules and regulations (Firestone and Drews, 1987, p. 22).

Case Management

Some of these problems can be alleviated by using a broker or case manager to coordinate services by a variety of organizations. Case management is defined by one health specialist as a "problem solving function designed to ensure continuity of services and to overcome systems rigidity, fragmented services, misutilization of certain facilities, and inaccessibility" (Hahn et al., Fall 1988, p. 2). Case management is particularly useful with disadvantaged youth and minorities because their multiple service needs are often complex and interrelated.

After reviewing the extensive literature pertaining to the practice of case management, the Center for Human Resources at Brandeis University found four major themes which underlie the process of successful case management. The first is partnership between the manager and the client, the manager and the participating organizations, and among the participating organizations. Managers must help their clients believe that they can control their lives by assisting them to set goals and to map out an efficient plan to meet these goals. Accountability among all parties is also crucial to the success of case management. Agreements concerning roles and responsibilities must be clearly stated. Finally, the client should have an active role in the process and his or her views should be respected (Hahn et al., Fall 1988, p. 3).

Outreach and enrollment procedures are very important in the overall success of the process. At the time of enrollment the case manager assesses his or her clients' needs and strengths, usually through a series of personal interviews. Important issues to be addressed in the first screening appointments include the client's basic level of communication skills, as well as his or her self-perception and emotional tone. The case manager should determine whether there is anyone in the client's environment who already provides support or serves as a role model. The client's educational background and emotional history should be reviewed and possible patterns in the client's past should be explored. Vocational and/or academic interests should also be determined. Finally the case manager should be aware of any past service that the client has received (Hahn et al., Fall 1988, p. 3).

The case manager must have the cooperation of institutions in order to be successful. Since the client is involved in a systematic process, it is important that service providers be willing to accept clients on a timely bases. However, gaining timely service can be very difficult, especially in areas of high need. However, this is one requirement which sets case management apart from ordinary referral services, which do not stress accountability. One of the most effective ways to assure timely referrals and cooperation is to form interagency partnerships. These alliances are hard to create and maintain and are considered one of the greatest barriers to effective case management. One solution is to further institutionalize case management.

CENTRALLY LOCATED SOCIAL SERVICES

Community Education Resource Centers

While the case-manager approach reduces some problems of coordinating service delivery, it does not address the problem of access. Even when services are well coordinated and referrals are made, access can be a major stumbling block for the client. Centrally located services not only overcome transportation and access problems, but they facilitate communication among all involved parties.

When the regents of the University of the State of New York gave their policy prescriptions to the New York State Education Department, they specifically called for a school-based and coordinated service delivery system in distressed areas. Specific components of this system include human services such as health clinics, nutrition programs, drug-prevention and rehabilitation programs, day-care and after-school programs, and career counseling.

Also recommended were academic support services such as instructional programs, curricular activities, tutoring, after-school events, business/industry volunteer programs, and parent/teacher/counselor conferences. Schools serving the greatest number of at-risk youth also need educational services targeted to specific populations such as preschoolers, unemployed adults, pregnant teens, and students who are learning English as a second language.

Because the tax base is so small in distressed communities, limited funds almost make coordination essential to address such a broad range of problems. By using schools to house these services, costs are lowered. The savings in rent provides an incentive for service agencies and organizations to utilize school facilities. The regents cite other reasons for using schools to provide services: schools are centers of all communities, their location is well known and safe, excess space is usually available, and they operate for less than a third of the day for only part of the year.

Two localities in New York are testing the idea of using schools as Community Education Resource Centers (NYSED, 1985, p. 2). Crotona Park East High School in the South Bronx was an underutilized school adjacent to an abandoned park used widely for drug transactions. Today, it is a successful Community Education Resource Center which provides services from the local church, boy's club, health providers, legal clinics, and other local agencies. Likewise, the schools in Elmira, New York, provide a broad range of services including adult continuing education classes, consumer education, and programs for the elderly.

These school-based programs are sometimes called community schools because the they serve as a multi-use centers for the entire community. The regents believe that their plan should differ from these examples by better targeting services to students' needs, including employment services and latchkey after-school programs.

New Futures School

In 1970, the New Futures School for Pregnant and Parenting Teens in Albuquerque, New Mexico, was initiated by the Albuquerque YWCA. Originally, the Albuquerque Public School System was only minimally involved in the program, granting class credit for classes taught in the New Futures School by certified volunteers. However, its commitment and support for the program grew over time, and, when the YWCA ceased its sponsorship in 1976, the school system continued it. A community-based organization was formed so community support could be maintained.

The school consists of two departments, the Perinatal Program and the Young Parents' Center. Participants in the Perinatal Program enter during their pregnancy and remain until their child is born. The Young Parents' Center, initiated in 1979, is designed to serve school-age parents who cannot participate in a regular school program in the year following the birth of their child. Both departments are comprised of several health and education components designed to retain students and to ensure that they and their families receive proper health care.

The program served over 425 students in the 1983-84 school year. Of these students, 33 percent of the Perinatal Program participants and 72 percent of the Young Parents participants had previously dropped out. Fifty-three percent of all participants were Spanish surnamed, 24 percent were White, 15 percent were American Indian, and 6 percent were Black (Gaston, 1981, p. 2).

The New Futures School offers courses required for graduation. In addition, participants take classes to help prepare them for birth and parenting. Vocational training is also offered. Classes are individually paced and range from basic skills to college preparatory.

New Futures is staffed with health professionals to ensure that young mothers are receiving prenatal care and are educated in nutrition. Breakfast and lunch programs are an important part of the available health services. Counseling is available if necessary.

Along with daily social and academic services provided by the school, several programs are offered on a weekly or monthly basis: representatives of the local Women, Infants, and Children (WIC) program office provide nutrition screening and education once a week; the Public Health Department brings a "Well Child" clinic to the school once a month; business and industry representatives provide guest lectures periodically; and the University of New Mexico School of Medicine Maternity and Infant Care Project operates a weekly prenatal clinic. The medical school also provides delivery services charged on a sliding fee scale (Gaston, 1981, pp. 1-6).

Alternative schools such as New Futures are usually initiated to remedy specific problems which occur disproportionately in a community. For example in Albuquerque teen pregnancy occurs at a very high rate, mostly because of cultural acceptance. The New Futures School is successful in coordinating area services for students in terms of Bayer's measures of cooperative relationships, in the ideological consensus found among all parties, and in terms of the results produced. Its success, however, may be facilitated by the relatively narrow spectrum of services it coordinates. Because all services relate to problems experienced by pregnant and parenting teens, there is a smaller probability that conflict would arise among service providers.

In many distressed communities, a multitude of problems decreases the likelihood that students will remain in school. Cities in Schools (CIS) and its Texas counterpart, Communities in Schools, were designed to confront a series of interrelated problems that affect many teens' ability to remain in school.

Cities in Schools

Cities in Schools is a national, nonprofit organization which addresses the needs and concerns of impoverished communities, businesses, educators, and the growing number of at-risk students in our country. CIS is primarily a dropout intervention program which brokers existing community services into the school.

Determining each student's unique problems, CIS emphasizes a holistic approach to the student's needs, utilizing various combinations of available resources and emphasizing individual attention, accountability, and coordination. The centralized location not only provides easy access for students, it enables counselors, professionals, and volunteers to use a case-team approach.

Nationally, CIS seeks to replicate their service delivery program as widely as possible. The national organization is supported by private businesses, foundations, individuals, and an interagency grant from the Justice, Labor, and Health and Human Services Departments. Five regional offices provide technical assistance and training for developing and establishing CIS communities.

Locally, CIS promotes and facilitates the coordinated delivery of existing health, social, education, and other support services at educational sites. The objectives of each local project are to improve at-risk students' attendance; to enhance personal, educational, and social development; to develop successful employment attitudes and skills; to increase parental involvement; and to reinforce positive social behavior.

A local CIS program is created when a superintendent invites the national CIS organization to the community. A national representative then helps the community create public/private partnerships and forge a relationship between the school system, the local government, public agencies, the private sector, and other groups. This network eventually forms its own not-for-profit organization. A board of directors, which assesses the community's specific needs, raises money, and chooses a "facilitation team," is established. The facilitation team actually coordinates existing community services and brings them into the school. A CIS education site project team consists mostly of social workers, employment counselors, recreation coaches, educators, health professionals, and volunteers, usually "on loan" from their home agencies.

Students are referred to the program from many sources including teachers, counselors, school administrators, social-service agencies, probation officers, and peers. Each student is assigned a case manager who assesses his or her needs, prescribes an appropriate plan, and establishes a personal relationship with the student.

The prototype of CIS was established in the 1960s by William Milliken, now president of CIS. Milliken helped set up storefront alternative schools called "street academies" on the lower east side of Manhattan. Academy staff believed that the social service system was failing at-risk youth due to lack of coordination, lack of outreach, lack of personalism, lack of accountability, and low productivity (Tutchings and Kinsey, 1987, pp. 2-3). The street academies were created to offer alternatives to the poor and disadvantaged, who were already caught in the unemployment, crime, welfare cycle. They received funding from various New York corporations and the U.S. Postal Service began supporting the program in the early 1970s.

When Milliken moved to Atlanta, he and others successfully tested some of the ideas that were generated from the street academy experience in New York City. He helped create alternative schools which incorporated coordination of services, greater accountability, and one-on-one counseling. These efforts resulted in Exodus, Inc., a very successful and visible program which operates under CIS.

In 1974, when CIS received major funding from corporate sources, more prototypes were created and tested. Milliken officially created the CIS program in 1976 and moved the headquarters to Washington, D.C. In 1977, President and Mrs. Carter actively supported the program, facilitating its eligibility to receive federal funding.

As the program grew, many problems began to emerge. First, there was no significant and steady source of funding. In addition, some of the local programs experienced administrative problems. Because there was no real "model" program, there was a lack of consistency among the programs. Despite these problems, CIS grew.

As of 1989, over 100 locally funded and administered programs in 26 cities served over 18,000 students. The program experienced its greatest expansion after 1985. As a result of increasing public and private contributions, 17 CIS sites were added from 1985 through 1988. Over half of the new programs were established in Texas, which functions under its own state plan called Communities in Schools. By the beginning of 1989, 31 additional cities nationally were in various stages of preparation for CIS program implementation.

THE COMMUNITIES IN SCHOOLS PROGRAM IN TEXAS

Houston began its own Cities in Schools program in 1979. Although this program's basic philosophy is the same as that of national CIS, it has operated independently of other CIS programs since its inception. In 1985, the Houston model was expanded to four other Texas cities, and Communities in Schools, a unique statewide program, was formed.

The Texas Communities in Schools program has the same goals as the national CIS program: to decrease the dropout rate, to decrease the delinquency rate, to prepare students for adult work roles, to improve school performance, to improve school attendance, and to improve the graduation rate. The program seeks to achieve these goals by coordinating area counseling, tutoring, social services, and business role models.

The program in Texas differs from CIS mostly in its administration and implementation. Each local program in Texas is autonomous and is responsible for governing and raising funds. The state office provides direction, with its overall philosophy, an operations manual, and basic setup suggestions. The localities had so much freedom that the state office implemented statewide minimum performance standards in January 1989.

Another way in which the Texas program differs from its national counterpart is the emphasis on the in-school aspects of its operation. In 1984, some of the participating agencies that had repositioned staff operating at school sites were the Mental Health, Mental Retardation Authority, Houston Child Guidance, Texas Parks and Recreation, the Texas Health Department, Juvenile Probation, the Department of Human Resources, the Jesuit Volunteer Corps, and University of Texas medical interns. Even with so much support, Communities in Schools suffered from uncertainties due to potential shifts in funding and legislation that threatened the program's survival. Communities in Schools staff aimed to offer even more school-based services, thereby reducing the proportion of referrals—about 60 percent of total services provided as of 1989.

Communities in Schools and JTPA in Texas

When the Job Training Partnership Act (JTPA) was passed in 1982, it provided great opportunities for Communities in Schools. Right away, the program was seen as a potential model for JTPA implementation, even though plans for the program's expansion under JTPA were very complex, involving numerous policy formulations and specifications.

The eventual union of JTPA and Communities in Schools stabilized funding for the programs. When Communities in Schools affiliates began to receive funds from JTPA, the program was required to provide pre-employment training to a certain percentage of their clients. Initially, this requirement did not seem to pose a problem nor did JTPA eligibility requirements since most Communities in Schools sites were located in low-income high schools whose students met both age and income eligibility criteria. The success of Communities in Schools as a JTPA program has made it possible to expand to Austin, Dallas, El Paso, San Antonio, Galveston, Corpus Christi, and Harlingen.

Over time, however, the disadvantages of JTPA funding have become more apparent. Dependence on JTPA funding has led to heavy emphasis on pre-employment training, regardless of student needs. More important, JTPA eligibility requirements make it impossible to use JTPA funding to initiate programs in elementary and middle schools. Yet according to one program manager, "dropout prevention does not happen at the high school level; earlier intervention, preferably at the elementary level, is necessary" (Akard, Interview, 1989).

Evaluation of Communities in Schools

A recent evaluation of Communities in Schools funded by the Texas Department of Community Affairs was intended to determine the effectiveness of as a model JTPA program. The evaluation was conducted for the academic years 1985-86 and 1986-87, focusing on three areas: the implementation of the Communities in Schools compared with procedures outlined in its *Operational Handbook*, Communities in Schools as a model of policy implementation under

JTPA, and the program's potential as a model for coordinating dropout prevention services within school systems.

Based on these criteria, the evaluation concluded that Communities in Schools was useful in a variety of settings employing diverse staff for children with varying needs. Overall, the participants improved their grades, behavior, and job-related performance and the program increased retention. Such students' success demonstrated a positive response to comprehensive in-school services.

According to the evaluation, over 2,500 students, 15 percent of the student body in participating schools, received assistance from Communities in Schools. Most of the participants were minorities: 69.1 percent Hispanic; 15.9 percent Black; 4.3 percent Anglo; 10.7 percent other (primarily Asian/Pacific Islander). These percentages do not reflect the the schools' total enrollments. Anglo participants were significantly underrepresented, Hispanics were significantly overrepresented, and Blacks appeared to participate in proportion to their representation in the schools. During the first year of the evaluation, males slightly outnumbered females 55.1 percent to 44.9 percent. However, proportionately more females were in enrolled in Communities in Schools the second year.

All participants demonstrated a relatively high economic need. The combined percentage of children coming from AFDC and Food Stamp households was over 30 percent. In addition, over 40 percent of the participants were enrolled in Free and Reduced Meal Programs.

After two years in the program, 95 percent of the participants stayed in school, more than 89 percent of those who demonstrated delinquent behavior stayed out of trouble, and over 55 percent of those who took part in job training were employed. In addition, overall absenteeism in participating schools declined by over 18 percent (Tutchings, and Kinsey, 1987, pp. vii-viii).

The evaluation found that Communities in Schools was flexible enough to work very well in different settings with diverse students and determined that students were especially responsive to the in-school nature of the program. The report concluded that "for coordinating and delivering services to 'at-risk' children, Communities in Schools is more comprehensive than any other program in the state" (Tutchings and Kinsey, 1987, p. x).

Overall, the evaluation applauded the efforts of Communities in Schools, noting that the program "achieves positive, high-priority outcomes"and recommending expansion to other Texas cities.

Table 9. Texas Communities in Schools: Evaluation Outcomes

DROPOUT RATES

	Program Year			
	'85-'86[1]		'86-'87[2]	
Group	Number	Rate	Number	Rate
Age 14 and older	65	6.4[3]	20	2.1[4]
All Age Groups	67	5.9[5]	24	1.7[6]
Projected	95	8.3[7]	36	2.6[8]

Sources: Tutchings and Kinsey, 1987. Student Service Records, Student Grade and Attendance Reports

[1] At fall 1986 follow-up

[2] At June 1987 follow-up

[3] Of 1,020 participants

[4] Of 950 participants

[5] Of 1,145 participants

[6] Of 1,387 participants

[7] Based on annualized rate

[8] Based on annualized rate and 85-86 Program data—31 percent of the dropouts occurred during the school year.

Table 9. Texas Communities in Schools: Evaluation Outcomes (continued)

CRIME PREVENTION

	Program Year	
	'85-'86[1]	'86-'87[2]
Total Number Offenders Served [3]	369	334
Number of Recidivists (%)	39 (10.5)	36 (10.8)
Disposition of Cases		
-Jail/Texas Youth Commission	4	0
-Expelled	13	9
-School Center	7	25
-Juvenile Probation	4	0
-Runaway Shelter	6	2

[1] At fall 1986 follow-up

[2] At June 1987 follow-up

[3] Those identified at referral or subsequently as court-adjudicated, pre-delinquent, drug-or alcohol offenses, or chronic or severe behavior problems

Table 9. Texas Communities in Schools: Evaluation Outcomes (continued)

JOB ENTRY

	Program Year			
	'85-'86[1]		'86-'87[2]	
	Number	**Percent**	**Number**	**Percent**
Job Need Identified[3]	242	23.7	514	51.2
Received Job Services	216	21.2	423	42.2
Referred for Jobs	379	37.2	332	35.2
Employed[4]	178	47.0	212	63.9
Unsubsidized[5]	42	23.6	127	59.9
Subsidized[5]	136	76.4	85	40.1

Source: Tutchings and Kinsey. 1987. Based on Student Service Records and information from TEC staff and program executive directors

[1] At fall 1986 follow-up

[2] At June, 1987 follow-up

[3] Percent of participants age 14 years and older

[4] As a percent of those referred

[5] As a percent of those employed

Concerning the coordination and delivery of services, the evaluation noted that because Communities in Schools was the only intervening force in the school, staff were expected to provide services in addition to those contained in the program's six core areas (listed above). As a result the evaluation recommended that the scope of services provided by Communities in Schools be spelled out more clearly. Conflict results when there is a misperception between teachers and Communities in Schools workers concerning the latter's role. Relating to Bayer's research on integrated social service delivery systems, the relationship between teachers and Communities in Schools staff still would be classified as *cooperative* because the conflict stems from an unclear understanding of specific roles, not from differing ideology or turfism.

Tutchings and Kinsey also saw the need to facilitate the relationship between local programs and Private Industry Councils (PICs). Communities in Schools is a good model for JTPA implementation, since most participants fit JTPA qualifications. However, state-to-local problems were observed because of a lack of access to subsidized employment opportunities. Because the evaluation does not fully discuss this problem, it is unclear whether this is simply a problem of access or whether it results from a dysfunctional relationship between local Communities in Schools programs and their PICs. However, it should be noted that unlike its predecessor, the Comprehensive Employment and Training Act (CETA), JTPA does not provide for public-service jobs.

The evaluation reported that the large number of referrals made by Communities in Schools to already understaffed community agencies had the potential to burden these agencies. To remedy this problem, Tutchings and Kinsey suggested that prior arrangements be made with referral agencies so that they may better prepare themselves for increased service demand. This step could also help ensure expeditious service to Communities in Schools clients.

Tutchings and Kinsey likewise made programmatic recommendations. The evaluators pointed out that the greatest number of students dropped out in the seventh and eighth grades. Yet only one middle-school program existed in each city, and all enjoyed high success rates. The evaluators emphasized their need for intervention at such a crucial stage and recommended that more middle schools work in conjunction with high schools.

The evaluation provides good background material on Communities in Schools and offers some useful recommendations for improving it. Nevertheless, the evaluation had some design flaws. Although results were overwhelmingly favorable, no information was collected on a comparison, or control, group to permit proper assessment of the findings. In addition, recommendations were based largely on data gathered several months or a year following participation in Communities in Schools. An evaluation of students after a longer time following termination from the program would be beneficial and revealing. Although the evaluators claim that "rigorous procedures" were followed in determining program effectiveness, they did not make many criticisms of the program in their report. This may be due to the fact that the evaluation was used in legislative hearings to support additional funding for Communities in Schools. Nevertheless, an adequate assessment requires more rigorous appraisal of weaknesses as well as strengths.

Tutchings and Kinsey recommend expansion of services, staff, and resources, yet they are not clear as to how to implement this expansion. For example, should existing sites receive more money and hire more staff, or should more programs be set up throughout the state?

Expanding Communities in Schools

The Joint Special Interim Committee on High School Dropouts heard testimony on established Communities in Schools programs. The testimony focused on the the program's evaluation and self-reports from individual city programs. According to the testimony, private industry finances between 10 and 70 percent of the programs in operation, with public funding providing the balance. Not surprisingly, both state and local staff have cited funding as the program's greatest problem (Ruiz, Interview, 1988 and Akard, Interview, 1989).

Senate Bill 367, sponsored by Senator Barrientos, established additional Communities in Schools programs. Specifically, the act requires secondary schools to participate in the Communities in Schools program if 10 percent of their students are at risk of dropping out and establishes legislative intent for Communities in Schools programs to be operated statewide. Funding from JTPA was earmarked to pay for the expansion.

While any expansion is good, one program manager expressed his concern about horizontal rather than vertical expansion. According to David Akard, program manager of Fulmore Junior High School, existing cites could probably double their caseload if they could afford just one more full-time staff person.

Communities in Schools: Views from the Field

Other problems with the Communities in Schools programs not captured by the evaluation surfaced in interviews with staff counselors and administrators. Turfism is a widespread problem on many levels. For example, the Austin Independent School District has its own dropout intervention program, creating many problems between it and the Austin Communities in Schools staff. The state program is attempting to mediate efforts to combine these activities.

Other problems involving turfism occur between agencies that receive referral cases from Communities in Schools. Some local service organizations claim that the staff "plays favorites" by continually making referrals to the same service agencies.

Communities in Schools deals with these problems by reinforcing a team approach among all members of the network. Common objectives and purposes seem to be the most important requirements for improving interagency relationships (Ruiz, Interview, 1988).

Teachers, overburdened with the many needs of at-risk students, are relieved to see Communities in Schools take over the roles they were often obliged to assume. Indeed, teachers are often frustrated that Communities in Schools can not do more for their at-risk students.

Some parents believe that the school should not intervene with personal and family affairs. However, a growing number of parents expect more and more from the schools. Akard attributes this to the growing number of double-income and single-parent households (Akard, Interview, 1989).

Language and cultural barriers also create problems. Many parents passively accept recommendations from Communities in Schools staff but do not take any action. Akard believes this has more to do with communications problems than lack of parental concern.

In many cases, parents have too many problems of their own or do not believe in the recommendations made by Communities in Schools. Service blockage may occur if no collateral person is involved in a referral case. In one especially difficult case, an Austin student with multiple problems was also being abused by his parents. His grandmother became involved with Communities in Schools and has played an active role in coordinating his case. Communities in Schools stresses personal responsibility and encourages students to follow through on outside referrals. However, students often deny their problems and therefore resist acting on their own behalf. Without motivation on the part of the student or support from his or her family, a staff person tries to provide the necessary guidance and hand holding until the student demonstrates responsibility.

At the program level, differences in professional ideology probably exist but do not hamper service delivery. Because there is so much going on at once in the local offices, the main problem among the local staff is "dealing with the chaos of the system" (Akard, Interview, 1989).

CONCLUSIONS

Social, demographic, and economic realities have made it more difficult for many to break out of the dropout/poverty/crime cycle. Because of the urgency of this problem, given its economic implications, it is important for our society to have a proven, but cost-effective, means for intervention. Coordination in the delivery of social services can be effective and efficient.

Furthermore, providing these services in the school could ensure early intervention, greater utilization, and lower costs.

The ability to forge a partnership among all parties involved is clearly one of the most important components of successful coordination. Service providers must cooperate with one another and view each client's well-being, not survival, as the overriding goal. Institutions and service agencies must have a clear understanding one another's roles in the system. Clearly, such partnerships are fragile and have the potential to cause conflict.

Some may expect the greatest source of difficulty to come from parents and/or the community, since our country values privacy and self-sufficiency—two ideals which may not be completely consistent with the idea of a comprehensive, school-based, social-service delivery system. However, parental resistance to the changing role of the school does not appear to be a threat to this model. Indeed families, finding both time and money in short supply, appreciate the help. Parents and community leaders do need to understand, however, that they are still essential components in this service-delivery model.

Schools should transcend their traditional role by providing needed services for students at-risk. Each program should be tailored to student needs, utilizing appropriate existing community services. Services should be provided in the school as much as possible. Referral cases should be closely monitored, drawing on members of a student's family when possible. A child's development takes place in the family, community, and school. Schools cannot take the place of parents or community role models, the three must work together to enhance a child's developmental process. Coordinated service programs must invest in education and outreach to enlist the support of the community and parents.

Communities in Schools in Texas is an effective model to address the interrelated problems experienced by students at-risk. Indeed its success has eclipsed that of its national counterpart, Cities in Schools. Several factors contribute to the success experienced in Texas: greater self-sufficiency of local programs; closer physical proximity, which facilitates more effective communication; the ability to work with the state legislature and to receive state assistance and support; and a greater understanding of the state's needs.

Communities in Schools should continue to expand in Texas. However, existing sites should not be neglected in the expansion to new locations. Existing sites appear to be terribly understaffed and only serve a fraction of those who could benefit from Communities in Schools services. Existing sites could expand their case loads greatly if they had the funds to hire more staff and buy more supplies. For the first time, Communities in Schools is receiving steady funding by serving as an implementation model for JTPA. Increased statewide funding has made the program's rapid expansion possible. However, Communities in Schools should not lose sight of its original goals simply to qualify for JTPA funds. Effective dropout prevention and successful intervention for at-risk students occur well before high school, yet most programs have been established at the high-school level (largely due to age restrictions in JTPA eligibility requirements). Communities in Schools should actively seek alternate, steady sources of funding so that additional programs can be established at the elementary and middle school levels.

A more rigorous, independent evaluation of Communities in Schools affiliates should be conducted. The evaluation should be comprehensive, use a control group, and collect longitudinal data. Although the existing evaluation of Communities in Schools provided useful information regarding the program, many issues were not addressed. No data were assembled to reveal how effective the program was with the various subgroups served (i.e., various racial and ethnic, age, and gender groups). The evaluation failed to estimate the number of potential clients who remain unserved in schools with the program; such information is critical in making both staffing and expansion decisions. Finally, any program must continually evaluated to ascertain its shortcomings in order to be improved.

Chapter 12. The Potential Impact of Restructuring on the Education of Minorities: The Miami Experience

by

Brian Rungeling*

INTRODUCTION

Numerous reports during the 1980s pointed out the need for improving American education. Growing dissatisfaction of parents, business, taxpayers, and the public with the performance of our public schools has prompted several waves of educational reforms.

In contrast to past reform efforts, a strategy called "restructuring" has begun in many schools. Restructuring makes fundamental changes in the rules, roles, and relationships in schools to improve student achievement. Decisions about how to improve learning are decentralized to teachers and schools; teachers, parents, and the community become involved in policy decisions formerly made by central administrative personnel.

Any attempt to restructure education must consider the impact the process will have on educational equity. Educational equity must be an integral part of any incentive system for judging schools, teachers, and school officials (Marshall, 1989, p. 12). Providing quality education for educationally disadvantaged students offers additional challenges but it has the potential to produce the most improvement.

In the mid-1980s, restructuring pilot projects were begun in Rochester, N.Y., Hammond, Indiana, and Miami, Florida, and a few other places. By the late 1980s, additional school districts were implementing restructuring. Experimentation initially was largely confined to areas which had large inner-city schools, those where union/school administration cooperation was possible, and where a need for improvement in the existing educational system was recognized. Educational attainment by minorities in these school districts was often low, and, therefore, educational reform and restructuring of the schools *should* especially benefit those who have received a second-class education under the old system.

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Educational restructuring is one type of educational reform. Restructuring is concerned with changing the process (e.g., doing things differently, experimenting, and learning) with the expected result that outcomes will improve. In order to be considered restructuring, the process should stress the following elements:

1. an experimental rather than a doctrinaire approach to learning problems;

2. a participative process that assumes there is more than one best way to learn and teach; and

3. a more participative system that requires fewer monitors and bosses but requires more technical assistance, in-service training, and logistical support (Quality Education for Minorities Project, 1990, p. 48).

Restructuring also involves decentralization of the decisionmaking process. The intent is to improve the quality of decisionmaking by involving as many people as possible at the grassroots level. Restructuring should attract more and better teachers since a more professional environment has been created. However, teacher professionalization is somewhat different. Teacher professionalization involves recognition of the important role that teachers play in the learning process by paying respectable salaries to teachers as well as providing greater recognition to the profession. In short, professionalization raises the prestige of teaching as an occupation. As professionalization occurs, it often encroaches on managerial prerogatives, and, when this happens, it becomes difficult to separate professionalization from restructuring.

THE SETTING

One school district experimenting with restructuring is the Dade County Public Schools (DCPS), which is the fourth largest school district in the United States and covers all of Dade County (the Miami, Florida, metropolitan statistical area). This metro area in 1987 had an estimated population of 1,791,000 people and was the tenth largest in the country. Located in southeast Florida, it has many of the same economic and social problems as other urban areas of the U.S., but it is also unique. It has experienced rapid population and economic growth in the past 25 years. The 1990 Census revealed that the Hispanic population accounted for 49 percent; Blacks, 19 percent; and non-Hispanic Whites 30 percent respectively. The Hispanic population is not homogeneous. In 1989, two-thirds of the Hispanic population was Cuban, 9.5 percent Nicaraguan, 6.0 percent Puerto Rican, 5.0 percent Columbian, 2.0 percent Mexican, and all others accounted for the remaining 10.5 percent. The district's student enrollments reflected the area's population—46 percent Hispanic, 32 percent Black, and 21 percent White. As the migration of Hispanics to Dade County has increased, so has the out-migration of Whites from Dade County and the school district. The result is a school district that has a predominantly minority student body enrollment. The school system in 1989 had over 270,000 students in 265 schools with over 25,000 school district employees, of which more than 15,000 were teachers.

The institutional setting, preconditions, and factors leading to an environment in Miami that made possible the school restructuring process are complex and have been detailed by others (for example, see Dreyfuss, August 1988, pp. 12-15; Duttweiler, December 1988, pp. 18-27; and U.S. Department of Labor, 1989a). A unique combination of demographic factors, state legislative action and mandates, a progressive union, and the maturation and progressive outlook of a school board and its administration produced a cooperative environment, and all played a role in the restructuring movement. The synergism between the union and the school system was made possible by the union's executive vice-president and the superintendent (U.S. Department of Labor, 1989a). Under their leadership, the distinction between management and workers became blurred, and their relationship went from adversarial to cooperative.

School-based management had been considered in Miami in the mid-1970s, but it was not until professionalization of teaching became a major focus of collective bargaining in 1986 that the possibility of school-based management became a reality. Out of a joint task force concerned with the professionalization of teaching, various committees were established. One committee concentrated on school-based management and shared decisionmaking. Ultimately, the task force recommended to the school board that a pilot program of 32 select schools be allowed to operate under this new system. One additional school was added later. Pilot I program goals included

1. an improved educational program for all students;
2. an increased focus of school district resources and shared decisionmaking at the school level;
3. greater flexibility and responsibility in budget development and management at the school level;
4. increased collegial planning, implementation, and evaluation of the instructional program;
5. greater opportunities for flexible scheduling and staffing;
6. increased teacher involvement in staff development activities; and

7. increased opportunities for community, business, student, and parent participation (Dreyfuss, August 1988, pp. 12-15).

In 1986, proposals to establish a school-based management/shared decisionmaking (SBM/SDM) process were solicited from the schools. In addition to a shared decisionmaking process, which had to exist at every school, each school also had to propose specific school projects and activities. The intent of restructuring was to create an educational environment with the freedom and flexibility to enhance current programs, encourage the initiation of new programs, and work towards excellence. These goals were accomplished by decentralizing power and significantly increasing the involvement of teachers in decisionmaking. Major areas expected to be affected by the process included school level performance objectives, curriculum, student services, public relations, budget, personnel, and the very nature of the school. The first round (Pilot I) included 33 schools selected by a review process from the initial 53 applicants. In 1989, 54 schools submitted proposals (Pilot II), and all were accepted. In early 1990, over 100 schools (over 40 percent of the total district schools) were designated as SBM/SDM schools. All schools (effective with the 1989-90 school year) were encouraged to become SBM/SDM schools (Pilot III); hence, the application and approval process evolved into an open enrollment procedure.

METHODOLOGY

The ultimate objective of educational reform and restructuring initiated in Miami is to improve the quality of public education. Thus it is both logical and beneficial to assess the extent to which qualitative changes have been made and how important restructuring has been in bringing these changes about. This assessment is impossible since data are limited due to the newness of the program. Also, the problem of sorting out the many other events, processes, and programs that affect the quality of education complicate the process. For example, in 1989 the school district and the United Teachers of Dade (UTD) negotiated some of the highest teacher salaries in the country, which probably had an attitudinal and productivity influence on teachers. The district is among the more innovative school districts in the country and is experimenting with a large number of programs. For example in 1989, the school district reorganized in a number of ways. At the top, the school district changed from four major subdistricts to six regions. Within the regions, the feeder pattern concept was extended to all schools; that is, elementary schools and middle schools were grouped by the high schools to which they feed students and the principals of all the schools in a feeder pattern were organized into teams to work together. Another major reorganization altered the goals and mission of grades 7, 8, and 9, converting all junior high schools into middle schools.

During the summer of 1989, semistructured interviews of teachers, principals, and union stewards were conducted in schools to ascertain their opinions as to the effect of restructuring and education reform in general. An attempt was made to include a representative sample of the various school levels and the varying types of organizational and management systems (i.e., Pilots I and II and those schools with no restructuring).

Utilizing the school and school population characteristics, as well as the parameters discussed above, 17 schools were chosen randomly for interviews. At each school, the principal, the union steward, and at least one teacher were interviewed. Of the 51 people interviewed at 17 schools, 17 were principals, 16 were union stewards, and 18 were teachers. The group of 51 was composed of 30 females and 21 males. By race, 25 were White, 18 were Black and 8 were Hispanic. The median age of the group was in the upper thirties to the low forties. Half of the 18 teachers interviewed had a master's degree. The educational fields of the 18 teachers varied significantly.

RESTRUCTURING IN DADE COUNTY

The pilot program was scheduled to be in operation for four years with the first year a planning year. The second year, 1987-88, was an implementation one, after which the first two years of implementation were to be evaluated. An analysis of the interim evaluation and a comparative examination of it with the results of field interviews with teachers, principals, and union stewards provides insight into the implementation process.

The interim evaluation study noted that the 33 schools in the Pilot I project had a higher percentage of new teachers relative to the district. Pilot I schools had a higher percentage of White staff than the district average and a lower percentage of Blacks and Hispanics. Pilot II and Pilot III programs should bring these averages in closer proximity to the district averages. Student enrollment had a higher percentage of Whites than the district average while the percentage of students on free or reduced-price lunch is comparable with the district, except for the elementary level, at which participation was substantially lower. Test scores were higher than the district's at the elementary and senior-high levels and close to the district's at the junior-high level (Dade County Public Schools, October 1988, p. 4).

The most often stated program feature of the Pilot I schools dealt with organizational scheduling changes. The second most frequently mentioned feature at the elementary level dealt with bilingual education, while next at the secondary level was staff selection and support innovations. Surveys of teachers immediately prior to implementation of SBM/SDM and during the program's first year indicated a significant initial awareness of SBM/SDM at the beginning of the program, with increased awareness throughout the year. Teachers in the Pilot I project also felt that the project departed radically from past practices and that innovations increased throughout the implementation year and resulted in more than half of the respondents feeling that the project had achieved its objectives in most areas (Dade County Public Schools, October 1988, p. 27).

The principal's survey portion of the interim evaluation found that:

1. SBM/SDM was both effective and efficient but was not always efficient in all areas;
2. the principal's job was now more complex and that SBM/SDM was time consuming;
3. the new reporting structure [to principals] was complex and confusing in regard to clarification of policies, etc.;
4. SBM/SDM was better for instructional idea and innovation generation than as a method to address administrative problems; and
5. principals were frustrated in that "they were still totally responsible and accountable, but not fully in charge" (Dade County Public Schools, October 1988, p. 28).

The interim evaluation noted a need for more in-house training and planning, a better preselection review, and a recommendation that schools should be more selective in choosing their activities. The survey of teachers, principals, and union stewards found that half of those interviewed believed that additional training continued to be a need. Since training programs existed, it can only be conjectured that the respondents were revealing a desire for an ongoing program to address topics more intensively or that more topics needed to be covered. Although the various surveys revealed that there had been sharing of experiences among the schools, the implementation of Pilot's II and III before Pilot I was completed ignored the recommendation that additional training was needed.

In summer 1989, more than 50 teachers, principals, and union stewards were asked about their knowledge and understanding of terms such as *professionalization, educational reform*, and *restructuring*. The fact that DCPS was attempting to improve the status of the teaching profession was well known by teachers, principals, and union stewards. There was no confusion with regard to what *professionalization* meant and how important it was to teachers. Most principals had full or partial knowledge of the meanings of *educational reform* and *restructuring* in their most generic forms, whereas teachers tended to have a lower level of knowledge. One might tend to think that this response is due to principals having more experience than teachers; however, the level of teacher experience was relatively high but probably in different areas.

It became clearer as the surveys were administered that respondents identified restructuring as part of the professionalization process. In fact, a review of the DCPS literature treats it this way, which obscures the intent of the restructuring process. Almost all respondents were aware that they had been provided with the opportunity for shared decisionmaking and for having input into the operation of their school.

Those interviewed were asked if they believed restructuring and professionalization were worthwhile. Almost 100 percent answered affirmatively, although a few respondents expressed reservations or concerns, such as that it was time consuming, that it created short-run turmoil, or that sufficient training was not available. Other questions attempted to ascertain the positive ways that the programs were expected to benefit the respondents, teachers at their school, and the classroom performance of their students. Respondents were allowed multiple responses. Approximately 75 percent of the principals appreciated the increased feedback, input, ideas, and support from faculty and staff. A few respondents voiced concern that principals' jobs had become more difficult and that more training was needed for them and for teachers. The most popular response by teachers noted enthusiasm for the new opportunity to provide input. Other responses indicated happier and more motivated teachers, and, as a result of more input from teachers, the administration is now more aware of certain problems. The respondents are now more knowledgeable. When principals were asked how teachers might benefit from restructuring, two-thirds of the principals pointed to the increased input and involvement in decisionmaking that teachers now have.

Mixed responses were provided by all groups regarding what benefits to expect from restructuring in regard to student/classroom performance. Many respondents either did not know or did not have an answer. Union stewards believed that student performance would improve because of the ". . . increased enthusiasm of teachers . . . who were happier . . . [and] more effective." Responses reflected the thoughts of then-Superintendent Fernandez who said that "the key to a good education is a happy teacher in the classroom" (Clary, 1989, p. 8). A similar belief was held by a few principals and teachers. Approximately one-third of both the teachers and principals expressed a belief that ". . . different things will be done . . . more creatively . . ." and that ". . . ultimately the climate and performance would change." A few teachers and principals explained that it ". . . was too early to tell . . .," or that ". . . no change" was expected.

Principals, teachers, and union stewards were asked if the restructuring and professionalization had affected their relationships with their supervisors. Most teachers and stewards responded that relationships had not changed. Those saying it had viewed the change as positive. Sixty percent of the principals also indicated that it had not changed relationships with their supervisors.

Interviewees were also asked if relationships and activities with the union had changed. Seven of the thirteen union stewards responding said no. Those answering yes, pointed to significant improvements in the provision of information and training. Teachers were almost unanimous in answering no and those answering yes reported improved relationships. Sixty percent of the principals reported no change in relationships while those answering yes indicated that relationships were much improved.

Principals and union stewards were asked what effect restructuring and professionalization had on their relationships with teachers. A majority of the union stewards believed that the relationships had changed and were improved as a result of a more open environment. Nevertheless, five of the thirteen stewards responding could not see any change. Principals responding were evenly split as to whether or not relationships had changed.

All three groups strongly believed that restructuring and professionalization were achieving their objectives. Although teachers were positive in their response, in general, they were considerably less positive than principals and union stewards. This response may reflect short-term frustrations during the early stages of program implementation.

The realities of implementing new programs were revealed when all three respondent groups were asked what their perceptions were with regard to how restructuring was doing in *other* schools. Principals were still highly positive about how the programs were functioning, while teachers and union stewards were less positive. Nevertheless, responses by all groups support the belief that they want the programs to work at their schools and at other schools.

The three groups were asked what they thought were the three most positive expected beneficial outcomes of restructuring. Multiple responses were provided but not all respondents answered this question. Two of the major responses (Table 10) made by all three groups are a result of restructuring. Increased development of the various professionalization programs was also mentioned by all groups, which reflects the large number of teacher professionalization programs available. One-third to one-half of the groups realized that restructuring is designed to improve academic and student achievement.

Questions were asked to elicit responses regarding the types of curriculum and other innovative learning programs implemented since restructuring had commenced. Multiple responses were given, and it was obvious that some programs were more important in the minds of the respondents than others. Further, some programs are probably more innovative than others.

As can be seen from Table 11, the Quality Instruction Incentives Program (QUIIP)—a statewide program providing financial incentives to teachers for innovative programs—and enrichment programs lead the list. Dropout prevention programs are on the minds of principals more than the teachers. After that, specialized and innovative programs were spread over a broad continuum.

Information provided by those surveyed revealed that a number of decisionmaking models existed at the schools. At some schools, an executive or super committee made all of the decisions.

At other schools, various committees such as a personnel or budget committee, would report to the executive committee or to the principal. The role of the principal also varied among schools. At one extreme the principal still had the final say and at the other, he or she only had input equal to any other committee member. At all schools, faculty and staff elected members to the committees.

Some schools were operating smoothly. Others had encountered significant problems in sorting out major issues from day-to-day minor issues, while still other schools had decided the principal could have free reign in day-to-day administration. Schools assigned their committees different titles. Any impact assessment should pay special attention to which models of decisionmaking are working best.

Last, but not least, is the extent to which minorities and minority education will be affected by restructuring programs such as SBM/SDM. If minority teachers and programs for students suffered under previous top-down administrative processes, one can only hope that a bottom-up approach will be more successful. Minority teachers must be involved in the process and will have to vocally express and provide their opinions and ideas. A few schools' respondents expressed concern that in their schools, an elite group of faculty on certain committees were making all of the decisions. If this is to be the dominant model, there is little chance for improving the lot of minority teachers and students, and it will reduce the effectiveness of restructuring. If all or many schools are going to participate in SBM/SDM, minority faculty will have to be effective in the committee process and in convincing their colleagues of the need and importance of attention to minority issues and problems.

In summary, implementation of the SBM/SDM program in Dade County has been a bold venture. The emulation of the program by other school districts nationwide attests to the program's appeal and high potential. With a few exceptions, the general morale and climate at the schools surveyed was very good. There was no notable difference in this respect between schools in Pilot I and Pilot II and those considering entry into Pilot III. Belief in the leadership of the superintendent was expressed many times by both teachers and principals. However, it was also obvious by the responses to the survey that there are some short-term problems with the program. Most of these have to do with in-service training, which needs to be offered at an introductory level and at advanced levels on a continuing basis. One frequently mentioned in-service need concerned financial management and budgeting. As the DCPS interim evaluation noted, there is a need to do some sorting out of, or concentrating on, a few areas that appear to have the most potential in increasing student performance and achievement. It also seems appro-

Table 10. Beneficial Outcomes of Restructuring

		Number of Responses		
Type of Response	**Teachers**	**Principals**	**Union Stewards**	
Academic improvement/curriculum and student performance	8	6	7	
Improved input/decisionmaking	10	8	8	
Professional growth/enhancement	7	4	4	
Parental and community involvement	1	5	2	
Total interviewed	18	17	16	= 51

Source: Personal interviews conducted with staff of Dade County Public Schools in summer 1989.

Note: Care should be excercised in interpreting this table because some individuals interviewed did not respond to any category and some responded to multiple categories.

Table 11. School Programs/Projects

Type of Program	Already Implemented			Planned for 1989-90		
	Principals	Teachers	Stewards	Principals	Teachers	Stewards
Academic Letter	1					
Integrated Approach to Math and Science		1			1	
Community School	1					
Computer Literacy	1	1	2			
Creative Writing/Gifted/ Advanced Placement	2	1		1		
Disadvantaged programs	2					2
Dropout Prevention		5		1		
Enrichment	1	6	2	1		1
Ethnic Sharing/Cultural Exchange	2					1
Family Reading Center/Program	1	1				
Global/International Instruction	2					
Learning disabilities		1			1	
Magnet				2	1	1
Mini-mall		1	1			
New Beginning					1	
QUIIP	3	2	6	1		2
Saturday Morning School	2	1	1			
Teacher Advisor Program	1	1	1	3	2	1
Teaming	1	3	1			
Touring Academy				1		
Uniforms	2					

Source: Personal interviews conducted with staff of Dade County Public School District in summer 1989.

priate that DCPS should not view restructuring as an end in itself. This has happened in Dade County because restructuring has been implemented as part of the professionalization program.

PARTNERS IN EDUCATION

Begun in September 1987, the Partners in Education (PIE) program has been a cooperative endeavor of DCPS, the local Urban League (under the auspices of the league's National Educational Initiative Project), the United Teachers of Dade (UTD), the Mitchell Wolfson Sr. Foundation, Dade County Community College, and Miami area businesses. Twelve schools (one high school, two middle schools, and nine elementary schools) composing the Northwestern Senior High feeder pattern were selected for the PIE project. By any definition, all twelve schools are inner-city schools, with student enrollment in each school practically 100 percent Black. All are located in the Liberty City area of Miami, a Black enclave north of downtown Miami and slightly to the northeast of Miami International Airport. Black teachers predominate in the 12 schools, which are under controlled staffing guidelines designed to hire more Hispanics and Whites. The primary goals of the PIE project are to enhance student achievement and to reduce the number of students at risk and to reduce the number of dropouts Prior to PIE, dropout rates were above the district norms and at one time were as high as 50 percent at Northwestern High School.

DCPS budgeted $1,000,000 for this program in the 1987-88, 1988-89, and 1989-90 school years. In addition, outside funds included matching college scholarship funds from the Wolfson Foundation. During the 1989-90 school year, the $1,000,000 was to be used in part for eight Saturday Morning School programs (a total of $176,000 or $22,000 for each school). The rest of the funds were used for program enrichments.

At the same time the PIE project was initiated, the SBM/SDM program began in Dade County. While 33 schools voluntarily participated in Pilot I of the SBM/SDM program, the PIE schools were placed in it by administrative decision. When the PIE program was implemented, it was also decided that an internal evaluation of the process of implementation would be made after the first two years of program operation (Dade County Public Schools, March 1989). The last year of the program (1989-90) would focus on the program's measurable impact. Other administrative reviews, subjective reviews, and internal audits were also planned.

DCPS released an implementation study of PIE's first two years under restructuring in March of 1989. Since the SBM/SDM program was utilized as a vehicle to implement the PIE program, some of the more important findings and differences between the 33 SBM/SDM Pilot I schools and the 12 PIE SBM/SDM schools have already been discussed. At this point, the analysis of the PIE program focuses on the unique elements of the PIE program as well as on information gathered in personal interviews with PIE school personnel in the summer of 1989.

The interim evaluation study of the PIE program observed:

1. [there was] some decrease in the level of [program] awareness [of teachers] . . . as the year progressed;

2. [there were] rather substantial decreases in reported levels of [program] involvement [by teachers];

3. by the end of the year, less than half of the respondents [teachers] felt that the project had achieved its objectives in most or all targeted areas;

4. the general [school] climate [as measured by the DCPS Office of Educational Accountability] of PIE schools was lower than national norms in virtually all cases; and

5. more than one-third of the principals interviewed indicated that the principal's job in project schools was relatively harder [now, than before] (Dade County Public Schools, March 1989, p. ii).

Personal interviews conducted in a sample of PIE schools in the summer of 1989 supported these conclusions. Most teachers (and union stewards) surveyed had difficulty identifying the major goals of the PIE program even though they were probably more involved in various dropout programs than teachers at non-PIE schools. They also appeared to be as aware of the goals of the SBM/SDM program as non-PIE school teachers. As one might expect, principals surveyed were quite cognizant of PIE program objectives. The SBM/SDM program had taken center stage in many DCPS schools and had overshadowed PIE.

The general climate of most PIE schools did not compare favorably with the rest of the school system. The interim evaluation indicates this may be expected, but it failed to note why this is so. The survey of teachers, principals and union stewards did not address climate and morale issues directly. There were no visible signs of significant morale problems, although now and then some teachers and principals in PIE schools exhibited signs of stress and frustration. The stress and climate is reflected in faculty turnover rates for the PIE schools that are higher than the district-wide average. An analysis of DCPS data on school achievement indicates that achievement by students in PIE inner-city schools is also substantially below the district-wide norms (Dade County Public Schools, March 1989, p. 4). Some of the inner-city school buildings are showing signs of age and heavy use. Security involving staff and student personal safety is a problem mentioned more often by inner-city school survey respondents. The negative effects of the surrounding community environment were listed by those surveyed as a major concern. A good case could probably be made that the role of the principal in inner-city schools is indeed either more difficult or different than the norm.

The recommendations made in the PIE interim evaluation were primarily concerned with SBM/SDM issues. Henry Goa, assistant superintendent of the North Central school subdistrict in charge of the PIE program, explained that he had ". . . some reservations about the lack of even a cursory formative [sic] evaluation of the project's primary goals—the at-risk pupils and the enhancement of academic achievement." However, Mr. Goa identified several indicators of recent progress, including the Black Student Opportunity Program at Northwestern High School, various schools have received several awards for academic achievement; several schools have been declared meritorious this past year, a 75 percent passing rate on the State Assessment Tests, and PIE parental involvement has been outstanding (Dade County Public Schools March 1989, appendix). The 1989 survey of principals, teachers, and union stewards would appear to contradict to some extent Mr. Goa's remark about parental involvement. Although some principals and teachers noted improved or excellent parental involvement, others indicated that it was a serious issue that needed more work. As a rule of thumb, responses at all school levels revealed that parental involvement tended to be more active at the elementary level and declined significantly at the middle and high schools.

Recommendations made in the interim evaluation of the PIE by the DCPS Office of Educational Accountability (OEA) were essentially the same as those made as a result of the SBM/SDM interim evaluation released six months earlier. The one PIE recommendation that differed concerned the need for improved program communications in the [PIE] schools (Dade County Public Schools, March 1989). The different nature of the PIE inner-city schools may have produced this recommendation. Inner-city schools seem to have more serious day-to-day problems that detract from long-term planning and concern with management styles and decisionmaking. They also tend to have more programs for disadvantaged students as well as programs for students with behavioral problems—all of which require considerable attention from teachers and principals.

The personal interviews inquired about the existence of new or innovative programs in operation or planned for the near future. Probably the most innovative, and one that has received considerable publicity, is the Saturday Morning School. This is a remedial program concentrating on reading, writing, and math. Not only is holding class on Saturday unique, but so is the fact that remediation follows closely after the identification of the problem. Experimentation by the PIE schools has shown that Saturday Morning School has more student and parental participation at the elementary level than the middle schools. Respondents noted that parental involvement in this and other programs tended to wane as students reached or approached adolescence. In the Saturday program, the basic skills are presented differently in an alternative learning environment, often by someone other than the regular teacher. The main learning stimulus is smaller classes and increased individual attention. Lunches are provided or made possible by parents who solicit donations from businesses. The Saturday program is sometimes coupled with GED course offerings for parents and Parent Teacher Association meetings. Teachers receive additional pay for participating in this program.

A small number of respondents mentioned that there should be alternative times to Saturday schools, such as longer hours during the day. The PIE inner-city schools have a slightly larger summer school participation by students. On the average, enrollment was approximately two-thirds of regular academic year enrollment. There was, in general, a tendency for summer-school enrollment to be higher at schools with large minority enrollments. Since only a very small number of schools with predominantly White enrollment were surveyed, the extent to which this phenomenon exists district-wide is not known; however, the district-wide average enrollment for the summer of 1988 was 55 percent (Dade County Public Schools, summer 1988, p. 1) and the summer 1989 enrollment was estimated at 60 percent. Principals surveyed noted a decline in discipline problems in summer school. The extent to which this results from the absence of problem children, a different learning environment, or the voluntary attendance of students is not known.

The existence and size of other remedial programs (or programs to reduce dropouts) varied by school. For example, many schools received federal aid in Chapter 1 programs, which concentrate on improving reading and mathematical skills. Students who test below certain functional levels in reading or math receive extra instruction during the day. This extra instruction is usually within the regular classroom rather than on a "pullout" basis and is facilitated by the use of teacher aides. One school was using Chapter 2 funds to operate a family reading center. This elementary school achieved parental involvement by encouraging students and parents to choose books to be read at home together.

The PIE program high school has started a Black Student Opportunity Program for at-risk pupils. Initially, this program allowed 75 tenth-grade students to earn and bank varying amounts of money depending on the grades earned. The higher the grade, the more is saved for later use upon entering college. The program is designed to reduce the chance of dropping out and to encourage further educational achievement. The success of this program has not yet been assessed.

Northwestern also operates a mini-school or school within a school for remediation purposes. Students tested as deficient in reading and mathematical skills and needing special assistance are given specialized and individualized attention. While such programs are obviously concerned with the at-risk student, they will also help to improve the standardized test scores of the schools. Most all PIE schools have various programs and activities to improve skills that are measured by standardized tests.

Another program just getting started at Northwestern High School in late 1989 was the Student Teacher Progress program. This district-wide program is primarily at the middle and high school levels. The program is voluntary and must be approved by a vote of the majority of the faculty. Through this program, the same teacher (ideally) stays with the students over several years as they progress through either middle or high school. By getting to know students better, teachers will be able to give greater individual attention to student problems and, thereby, make possible an enhanced learning environment for the student. A number of teachers interviewed indicated that they needed increased training in the counseling area.

A few programs at the PIE schools were concerned with discipline and behavioral problems, and district-wide programs addressed learning disabilities. Respondents at a few of the PIE elementary schools noted the existence of behavioral learning/modification centers that address discipline problems. State funds were available for such programs and some schools operate ALPHA programs with these funds. Under ALPHA, problem children are placed with special counselors. Enrollment in the program is limited. The extent to which ALPHA is used district-wide is not known.

In the enrichment area, several schools were either magnet schools, or officials plan to make them into magnet schools in the future. Respondents often pointed to these programs with pride. Of special note were programs in the performing arts and broadcasting that generated significant interest, possibly due to the glamour associated with these professions. A frequently mentioned district goal associated with magnet programs is the voluntary provision of desegregation and cross-cultural learning experiences.

The Quality Instruction Incentives Program (QUIIP)—a statewide program—program that provides financial incentives to teachers and schools—is popular in PIE schools. Involvement is voluntary for teachers and must be voted on by the faculty. An area of concentration is chosen which may be either academic or nonacademic. Some science and technical programs were chosen, but they did not predominate. Funds are provided by the State of Florida. Evaluation and competition with other schools in the district lead to school recognition as well as financial rewards.

Personal interviews revealed that PIE schools concentrated more on relationships with the business community than did other schools. Most schools were aware of who their Dade Partners were and spoke highly of them and their support and involvement in school activities. Unfortunately, in some cases the number of partners was small and was a long way from being a cross-sectional representation of the entire Dade County business community. One elementary school had a mini-mall operated by students where they learned about various occupations and skills associated with the business world as well as what it is like to be a customer. Another elementary school operated a career lab in which students were exposed to over 30 different occupations. Schools surveyed tended to list business involvement in terms of financial support for scholarship programs and as a booster of the school when needed.

Respondents in the survey were unaware of a number of programs, including some that have received significant publicity. These programs include a buddy system, the use of churches and church members in tutoring students, as well as the Miami Promise program, which promises a college education to students who graduate from high school. These omissions may have been because the programs aren't in effect at the schools surveyed. Also, some of these programs may have faded away. Their omission may have been an oversight on the part of those surveyed, which is not inconceivable, given the existence of so many programs.

No evidence of school-based health and community service linkages existed in the schools in the sample, but counselors often referred students to various community agencies and services. As has been noted by others, many of the systems that have supported children have become quite weak in modern society, especially those for families living in poverty (Carnegie Council on Adolescent Development, 1989, pp. 22-25). Hence, the lack of a "school-linked comprehensive service delivery system" (McLaughlin and Smrekar, 1989) could be considered a serious flaw in the PIE program.

In fall 1989, it was difficult to gauge the extent to which PIE was achieving its goal of enhancing student achievement and reducing the dropout rate. The limited data available from 1987 and 1988 permitted only a one-year analysis. A rough, provisional analysis of these data indicate that no significant impact has been made by the PIE program in reducing dropout rates and improving achievement indicators. However, a better assessment can only be made when more longitudinal data are available. The interim report of OEA and the field interviews show that the schools are trying a wide variety of programs under various banners. Both studies show that the integrity of many programs is violated by the existence of so many programs. While experimentation with various programs is healthy, the more successful ones need to be identified and implemented and the unsuccessful ones need to be eliminated. Further, piggy-backing PIE on the SBM/SDM program appeared to blur the intent of the PIE program. The district-wide attention and implementation priority that SBM/SDM has received may have reduced the impact of PIE, but only a final impact study will be able to assess that.

The strength and ultimate success of the PIE program will in part depend on the feeder pattern concept, the involvement of parents and the community, the extent to which linkages with comprehensive service delivery systems are developed, and the priority and support it is given within the school system. The feeder pattern operates by all nine elementary schools feeding into two middle schools which, in turn, feed into the one high school. The concept of lead principals and other principals working together on related issues and problems appears to be the strength of the program. In such an environment the student's education (and possibly lifestyle) will be guided from early childhood to either college or employment. The feeder pattern concept was adopted district-wide in 1989. Instead of DCPS operationally being divided into four districts, there are now six regions, which are further divided into school feeder patterns, with lead principals and all schools operating in a feeder pattern.

The twelve PIE schools are all located in the infamous Liberty City area of Miami. In this area, practically all the population is Black and the incidence of poverty and crime is very high. While increased involvement of parents was noted at a number of schools, there could be some limits to the amount that can, or perhaps should, be achieved. While community pride exists at some schools, it is lacking at others. Some schools have, or are planning, school uniforms to increase school and community pride. Innovative and meaningful involvement of other parts of the Dade County community, including government agencies and businesses, in developing solutions to the issues and problems faced by the inner-city schools should be of great benefit to the achievement of the PIE goals.

MINORITY PROGRAMS AND DESEGREGATION PLANS

In 1969, the U.S. District Court for the Southern District of Florida ordered the Dade County School Board to desegregate school staffing so that:

> . . . not later than February 1, 1970, the principal, teachers, teacher-aides, and other staff who work directly with children in a school be so assigned that in no case will the racial composition of a staff indicate that a school is intended for Negro students or White students (Dade County Public Schools, 1987, p. 8).

The district-wide percentages of teachers required at that time were elementary level, 24 percent Black and 76 percent White; junior high level, 21 percent Black and 79 percent White; and high school level, 12.2 percent Black and 87.8 percent White. By various means, teachers were transferred in the early 1970s in an attempt to achieve these ratios. Due to transfers, resignations, retirees, and new hires, a large proportion of schools were not in compliance by the late 1970s. Hence, in the 1980-81 school year administrative measures were taken that established faculty ratios and placed schools not in compliance on controlled staffing. In August 1981, the school board adopted a rule stating that "acceptance of work location assignment is a condition of employment," which, subsequently, was incorporated into the UTD labor contract (Dade County Public Schools, 1987). Over the years the ratios have been changed administratively and by committee recommendation. In December 1988, new ranges of ratios for Black staffing were announced for each level of schooling as follows: elementary, 27-33 percent; middle, 24-40 percent, and senior, 15-21 percent. The justification for this change was "to assist schools in achieving enhanced compliance levels" (Dade County Public Schools, December 1988, p. 5). In September 1989, only 12 schools were considered to be out of compliance by DCPS.

DCPS and UTD have, and are continuing to develop, plans and programs to encourage White teachers to move to schools that are predominantly Black and vice-versa. In the past financial incentives were given to encourage teachers to transfer. In June of 1987, when approximately 70 schools were out of compliance or on controlled staffing, a plan was developed, which instead of providing direct financial incentives, provided incentives indirectly to staff who are actively working towards their master's or doctor's degrees. In return for the support, each participant signs a contract pledging that he/she will stay at least five years at the controlled staffing school selected. According to DCPS, the Professional Growth Program is cost neutral and is no doubt cheaper than paying all of the staff at controlled staffing schools financial incentives. Further, paying the transfers or new hires a supplement could create morale problems at those schools. In September of 1989, the program was relatively small and had 46 participants.

Data made available by the school district on the number of active employees revealed that 52.7 percent of active, full time teachers were White; 26.8 percent were Black; 20.2 percent were Hispanic; and 0.4 percent were of other ethnic origin as of April 17, 1989. If the school faculty population is to be representative of the area's racial composition—or the composition of the student body—it is obvious that Whites are overrepresented in the current faculty census and Hispanics are underrepresented. Further, perhaps surprisingly, even Blacks are overrepresented in this case. They are, of course, concentrated in Black schools located in Black residential areas of the county.

Data from the Bureau of Personnel Management for September 1, 1988, revealed that the county is hiring Blacks and Hispanics at higher rates than Whites. Even more recent data indicate that of those teachers hired by DCPS for the 1989-90 school year, 33 percent were Black, and 29 percent were Hispanic. The data in Table 12 show that of those qualified (hired and qualified/not chosen), the percentage of qualified hired is significantly higher for Blacks and Hispanics. The fact that a pool of over 2,000 qualified Blacks and Hispanics is available but not hired is of interest. It would seem that there are different interpretations by teachers/principals and the DCPS administration as to the necessary requirements to be termed "qualified." Some teachers and principals expressed concern as to just how qualified certain applicants were. These respondents seemed to be particularly critical of retreads or those faculty they claimed were attracted to teaching by the recently negotiated salary increases. Are DCPS requirements too low? Are teachers requirements too high? The final decision as to who is hired at the restructured schools varies from school to school. At some schools, a *cadre*, or *super* committee makes the decision, and at others, it is a personnel committee. The involvement of the principal varies by school as well. In some schools, he or she still has the final say, while at others the principal's wishes are reflected as a member of a committee. The personal interviews revealed that principals are having difficulty in sorting this out from school to school, but they noted that DCPS still holds them accountable for the final decision. Attention needs to be given to hiring policies since more of the final decisions regarding hiring will be made by the faculty at the restructured schools. For example, more in-service training and informational programs on affirmative action and desegregation plans could be beneficial.

The issue of student racial balance was also addressed in a U.S. District Court order in 1970 that stated "The Court feels that a predominantly Black school is desegregated when less than 85 percent of its enrollment is composed of Black students." In the 1986-87 school year, 33 schools (28 elementary schools, 3 junior high schools and 2 high schools) had over 85 percent Black enrollment. One year later, the number jumped to 39 schools. In 1988-89, the number dropped to 38. As part of its five-year plan, DCPS plans to commit considerable resources to magnet schools. DCPS is extremely interested in the effect that magnet schools will have on desegregation. DCPS hopes that Blacks will be attracted to predominantly White (or Hispanic) schools while Whites will be attracted by the magnet programs to the predominantly Black schools. However, DCPS has already been criticized by one Black group for using magnet schools as a desegregation tool. A spokesperson from this group believes that this will mean "... segregation within the school . . . [because] . . . Students in magnet programs meet in separate classrooms and use higher-quality equipment. [Further] If a group of White students went into a predominantly Black school under these conditions, it would work to the detriment of Black students, who already might have low self esteem . . ."("Black Group Rips Magnet Programs," 1989). A major criticism of magnet schools in general is, of course, that they do not pretend to provide equity and equal opportunity.

Other administrative policies also have been implemented to enhance desegregation. Transfers to and from schools that are predominantly of one ethnic group are discouraged and are difficult to obtain, especially if the school requested is overpopulated. Transfers from majority to minority schools are encouraged, but there is no forced transfer system or busing in Dade County. Comments from various DCPS officials indicated that at the time of the original court order this option was ruled out by the court.

In addition to the 39 predominantly Black schools, 44 schools were over 85 percent Hispanic in 1989. Further, an additional 18 schools had between 75-84 percent Black enrollment and 17 schools had 75-84 percent Hispanic enrollment. Dade County, a few other areas of Florida, California, parts of Texas, and a few other districts in the U.S. are unique in having large enrollments of Hispanics. Court desegregation orders in the Deep South made over 20 years ago were, however, primarily concerned with Black/White integration. Dade County in 1989 has three types of schools in terms of student enrollment: predominantly Black, predominantly Hispanic, and mixed. In terms of teacher staffing, inner-city schools are predominantly Black, while all other schools represent diversity but with Whites dominating the total number employed.

Actually a few schools are still mostly White—four schools had over 75 percent White enrollment in 1988. The concentration of ethnics in various schools is a reflection of the segregation, or clustering of ethnic groups, that occurs in housing. Even though the district had 36 magnet schools in 1989, it is doubtful that DCPS has the resources to create enough magnet programs to entice voluntary student desegregation. Hence, DCPS has become proactive in involving itself in an *ad hoc* housing plan and has set up a committee that seeks to make affordable housing available to all in Dade County. In fall 1989, the program was just getting underway. This activity is very political, and the extent of its influence and success will not be known for awhile.

Programs for Minority Students

Our personal interviews with teachers, principals, and union stewards attempted to identify any programs operating in the school system that were specifically for minority students. Many respondents indicated that any programs available to students were open to all regardless of race, religion, or creed. Nevertheless, certain types of concentrations were found [e.g., Hispanics are concentrated in English as a second language (ESOL) programs, and Blacks tend to be concentrated in certain types of programs for the disadvantaged (free or reduced school lunches)]. Further, although not peculiar to Dade County, Blacks often have the highest at-risk or dropout rates.

Asked specifically about existing or planned programs for minorities in their schools, many respondents pointed to Black or Hispanic awareness programs or social clubs. They also pointed to ethnic pride days or other special holidays and events stressing cultural heritage.

When asked what they thought of bilingual programs in the schools, all three groups had responses that can be classified as follows: great/no problems, o.k./some problems, and should be eliminated. It was also apparent that, like the general public, these groups are influenced by social biases. The responses to these questions tended to follow racial lines—that is, most, if not all, Hispanics approved of the programs; Blacks did not have many comments since most Black schools did not have the programs; and Whites tended to oppose, or be more critical of, the programs. Most of the critical comments were

1. pullouts from classes disrupt the educational process (this comment was often made about other special programs as well);

2. immersion would work better;

Table 12. Teachers Hired for the 1988-89 School Year: By Ethnic/Racial Group (As of September 1, 1988)

Category	White	Black	Hispanic	Asian	Indian	Total
Total applicants	7,409	2,906	3,085	118	26	13,544
Not qualified	2,283	815	847	64	7	4,016
Incomplete application	1,904	795	815	21	8	3,543
Qualified/not chosen	2,708	996	1,119	28	9	4,860
Hired	514	300	304	5	2	1,125
Hired as a percentage of total applicants	6.9	10.3	9.8	4.2	7.6	9.0
Hired as a percentage of total qualified	15.9	23.1	21.4	1.5	18.0	18.8

Source: Compiled by the author from records provided by DCPS, Bureau of Personnel Management.

3. students are often in the English as a second language (ESOL) programs too long;

4. ESOL teachers are not the best or have strong accents;

5. bilingual and ESOL programs are a necessity for living in the area; and

6. in addition to bilingual programs and ESOL, acculturation programs are needed.

An evaluation of the bilingual programs was underway in Dade County in 1989. Any recommendations for changing programs should definitely be made after taking a long look at the preceding comments (biased or not) of principals, teachers, and union stewards as well as the findings of the study conducted by DCPS.

Respondents were also asked what benefits they believed minority teachers and students would gain as a result of restructuring and educational reform. Most respondents were surprised by this question but in general and regardless of race believed and responded that all would benefit from restructuring and educational reform and that there would be no differential gain by any group.

In addition, several programs for the disadvantaged, as well as those designed to reduce the number of dropouts, are in operation district-wide. Such programs are made available through federal or state funds and include Chapter 1, Chapter 2, and free or reduced lunch programs. They also are often designed to provide remedial assistance in math and reading skills. These programs exist district-wide and throughout the country.

Some programs—although not exclusively for Blacks or Hispanics—are unique to Dade County. One is the Saturday school devised to reduce dropout rates by providing at-risk students an opportunity to do *immediate* remedial work in the areas of math and reading. This program has been tried at all school levels in Dade County but appears to be most successful at the elementary level. In fact, for the 1989-90 school year ". . . federal monies have been provided to enable 67 elementary schools the option of offering Saturday classes to their Chapter 1 students" (Dade County Public Schools, March 1989, p. 4). Saturday schools at the middle and senior levels would probably be much more expensive to operate and would require both a more intensive and extensive educational program.

Another unique program in Dade County is the Satellite Learning Centers. As of late 1989, there were three satellite schools in operation. Theoretically, these centers provide the opportunity for increased integration because the workforce of a company or organization probably will be more diversified than the residential area from which students of a regular school are drawn. A personal visit to one of these schools in the spring of 1989 revealed that classes were small (in fact excess capacity existed) and the number of Blacks in the class was small. The lead teacher indicated that the racial composition of the classes at that time was 55 percent White, 36 percent Hispanic, and 9 percent other.

In addition to potentially increasing the racial mix of the students, these centers offer a number of benefits over regular schools . The school system has chosen to introduce the lead teacher concept in these new centers. DCPS notes that "... the satellite helps ease transportation costs and overcrowding . . . [and that] . . . Employers have already documented a substantial decline in absenteeism, tardiness, and the turnover rate among parents (Dade County Public Schools, March 1989, p. 4). It also appears that building, maintenance, and certain operational costs of operating facilities have been reduced. One center had no further grade expansion plans than adding the third grade. When asked why, the business firm noted problems associated with libraries and other support services. If a large number of satellite centers are constructed, many of these support service problems could probably be solved. For example, the availability of library books could be handled through a bookmobile or some other system of making books available.

One program that has been in operation for a short time is called Florida Action for Minority Engineers (FAME). Initiated by faculty in the College of Engineering at Florida International University and the DCPS Office of Desegregation, the program originally focused on 40 Black inner-city students who would be immersed in a three-week summer engineering program with follow-up contacts between students and faculty during the school year. In 1989, the program was expanded to accommodate 75 Black students. Several topics on science and engineering are included in the curriculum, as well as field trips and related activities. Credit is available for taking the courses, and it was anticipated that those students wishing to become engineering students would receive individual attention from the college faculty, which would eventually result in the students entering the university. The first-year cost of this program, amounting to $60,000, was provided from university and school-district funds. The program resembles the Upward Bound program but is concentrated on a professional occupational area.

Programs for Minority Faculty and Administrators

There are no programs specifically for minority faculty and administrators other than the affirmative action plans for teachers and administrators. However, several professional growth programs have been developed jointly for all faculty by the school district and the union. These include the previously discussed programs designed to encourage faculty transfers to controlled staffing areas. The Professional Growth Plan rewards such transfers by financing advanced college training in exchange for the transfer and a commitment to stay at that school for five years.

The Dade Academy for the Teaching Arts (DATA) provides a nine-week program of seminars and clinics, which encourages research and the development of creative teaching plans and strategies. This program is operated by the teachers in cooperation with UTD but only at the secondary level. A small number of teachers in the survey remarked that the school district should have a sabbatical program. Such a program would be an expensive undertaking but one that could accomplish goals similar to those of DATA and not only result in creative activities but possibly reduce teacher turnover and burnout.

The Teacher Education Center, a joint DCPS/UTD operation, trains teachers to use research data in their instructional programs. Teachers with ambitions to become administrators can participate in the Leadership Experience Opportunities Program for Teachers (Leo T), which gives qualified teachers a semester of administrative experience in two schools. Several initiatives are now under joint consideration by DCPS/UTD to enhance teachers' career ladders.

Several programs are available to administrators. One is the Leadership Experience Opportunities (LEO-AP) program that is similar to the Leo T program for teachers. The program is primarily for assistant principals and area and district administrators who acquire experience one step higher during the summer term. A number of the field survey respondents remarked that SBM/SDM had by-passed the assistant principal, and they were not clear as to what the role of the assistant principal should be in the future.

Programs such as the Associate Executive Training Program, Management Academy, policies of rotation of administrators, and district exchange programs are all designed to provide experience for upgrading administrators. DCPS does have an affirmative action plan that seeks to place additional numbers of minorities in administrative positions.

Problems and Actions Recommended by Survey Respondents.

As part of the personal interviews, the three groups were asked what specific school issues and problems were not being addressed by the restructuring process and what action they would recommend. Responses fell into the following seven categories:

(1) *Restructuring*. Major comments with regard to restructuring concerned implementation issues. A number of teachers continue to make a case for more intensive training on topics such as financial management, decisionmaking, etc. All teachers experience some frustration because they believe that many questions and issues are being addressed but not solved. Some believe that the schools are doing too many things and that focusing on priorities may be in order. Notably absent in the responses was any recommendation to eliminate the program. In short, all groups accepted the program.

(2) *Status of teaching*. It was surprising to see responses concerned about the lack of prestige for the occupation of teaching. This appears to be a concern about external recognition since DCPS has many programs designed to encourage professional growth, and salaries have increased significantly.

(3) *Curriculum*. Although there were exceptions, the responses in this area lacked focus. Responses revealed little awareness of the existence of public concern about both the learning process and the end product of the school system. The groups noted the need for better-trained teachers, longer days, increased training of teachers in counseling, less emphasis on preparing for tests, higher certification standards, better motivated students, and more emphasize on the basics.

(4) *Paperwork and bureaucracy*. A number of persons interviewed indicated that the level of paperwork and bureaucracy was still high. The number making these comments was not large, but they were made when both an administrative drive to reduce the amount of paperwork and to decentralize was well underway. The comment was made more than once that SBM/SDM had created a new bureaucracy as well as more paperwork.

(5) *Need for greater parental and community involvement*. This response came primarily from the inner-city schools but was noted throughout the interviews. A number of schools in this category quickly pointed with pride to their successes but also were quick to point out their frustrations in this area. They were well aware of the changing family composition, changing family roles, and the growing importance of single heads of households. There is confusion about and possibly resistance to educators being expected to take over what many consider to be family prerogatives.

(6) *Societal issues and problems*. The other area of parental involvement concerns major societal issues and problems which affect the learning environment. Inner-city areas which have high crime rates and drug problems do not provide an environment conducive to learning. As one principal related, "... we are beginning to have to face the complex problems of educating children who were born drug addicts ..." Property and personal security problems were noted by some respondents, although most respondents did not give this issue a high priority.

(7) *Lack of money*. Responses also concentrated on concerns about the lack of funds. This is surprising in view of the large increases in salaries received in 1989 by teachers and staff, and recent increases in capital outlay funds accompanied by increases in taxes for education. Respondents may be expressing the opinion that, regardless of funding level, there are always many more needs.

CONCLUSIONS AND RECOMMENDATIONS

Dade County and its public school system are unique. The area's population is heterogeneous. Hispanics are the dominant ethnic group, and Blacks are a large minority population. The economy of the area is dynamic, with a wide diversity of industries and service-oriented occupations. Population growth is rapid due to large numbers of immigrants from the rest of the United States and Latin America. There are major city/inner-city problems, as well as those associated with a recent and large immigration of foreign-language-speaking people who come from many different countries and from all walks of life in their native countries.

In short, the inputs to the Dade County Public School System are extremely diverse and present significant challenges to the system. In order to meet these challenges, the school district is committed to a system that permits great flexibility at the local school level. Teachers, principals, and administrators have begun to take advantage of this freedom and take initiatives in the learning and educational process. This flexibility and spirit of innovation has been facilitated by the cooperation of the United Teachers of Dade County.

DCPS is committed to restructuring and educational reform. The largest activity is the School Based Management/Shared Decisionmaking program. In addition to the various career-enhancing programs, other notable programs include the Satellite School program, Saturday Morning Schools, QUIIP, and Magnet programs, which are operated both in schools that have been restructured and those that have not.

Empowering teachers and staff has allowed them to become involved in decisionmaking associated with budgets, personnel, policymaking, and curriculum. The field survey indicated that teachers are just beginning to get involved in the curriculum process. The survey showed that, in general, faculty, principals, and union stewards are highly supportive of the program. The survey also revealed that faculty and some administrators have yet to see that restructuring is not the end of educational reform. In some cases, the survey also found that teachers had difficulty in articulating the stated purpose of the process. They were aware of the empowerment, decentralization and their new role in decisionmaking, but they were unsure about why this was going on and what the end results were to be.

A majority of teachers hired for the 1988-89 school year were either Black or Hispanic. It is unclear whether a process of teachers hiring their peers will produce a minority hiring rate as high as that of the central administration's. There was some indication from field interviews that teachers have different perspectives on teacher qualifications, and they may judge the qualifications of applicants differently. In any case, the hiring of minorities as teachers bears monitoring as personnel decisions become more decentralized.

The minority hiring record of DCPS for the past few years is commendable. Yet it is difficult to explain why, for example, in 1989 there were 2,115 qualified minority applicants that were not hired. Again, it may be that the definition of qualified varies between the central school administration and the schools where the hiring decision is made by principals and/or faculty.

On a positive note, the PIE program has achieved several accomplishments since 1987 when it was established. The feeder program in which elementary schools feed into middle, then senior high schools piloted in the PIE has been adopted system-wide. Within a feeder network of schools, lead principals work together to resolve common issues and problems. The PIE program has showed some success in increasing the involvement of business communities and parents. Individual PIE schools have demonstrated successes in reducing dropouts and enhancing school achievement. However, provisional analysis of two-year dropout data and standardized test data for all 12 schools indicates that the program's success as a whole has been limited.

To some extent, PIE has been overshadowed by the restructuring process that has received top priority system-wide during the 1987-89 period. There is also a need for greater business and community involvement from a cross section of Dade County's business firms and the community at large. The program's goals need to be reexamined. The concept of organizing middle school teachers into teams opens opportunities for additional advising and counseling and should greatly enhance the PIE program at the middle school level. The extent to which parental involvement can be increased is of a major concern to the principals in the PIE schools and needs further careful examination. The absence or weakness of linkages with social service delivery systems also deserves attention.

The school restructuring component of the education reform movement offers the greatest hope for improving both the quality of minority education and the attractiveness of the teaching profession to minorities. Most programs in the restructuring movement are not necessarily designed for minorities or the disadvantaged. Yet, as was noted in the field survey, restructuring should benefit all teachers and, ultimately, students. Black and Hispanic faculty, administrators, and students all should benefit from processes and programs such as SBM/SDM and PIE, since minorities are in the majority at Miami/Dade. The extent to which they will benefit depends on how closely the programs are monitored and eventually evaluated. Our field surveys also pointed out that it is most probable that the only advocates for minorities in the restructuring process will be themselves. Programs that may offer the most for minorities in terms of achieving educational equity are those such as Saturday morning and Satellite schools. Each has its minor problems, but the small demonstrations to date have shown significant promise. Both will require additional funds and attention to expand with success.

Because of its empowerment/democratic concept, as well as its highly practical effects in professionalizing the role of teachers, exportation of SBM/SDM to other school districts is strongly encouraged. Minority faculty and students should benefit under this system; however, it should be closely monitored since there is some potential for abuse and misuse.

Within Miami and Dade County, the restructuring process should be expanded to as many schools as possible. Training on a range of subjects needs to be institutionalized in the school system. Future evaluation of the program should examine the extent to which restructuring is enhancing curriculum and increasing the educational achievement of students. Other questions about the process should be assessed:

1. How accurate are the results of group decisionmaking?
2. How fast/slow is the decisionmaking process?
3. Does decisionmaking improve with time and experience?
4. Is more information processed by groups?
5. Are more alternatives proposed through shared decisionmaking?
6. To what extent does compromise degrade the quality of the decision?
7. Is indecisiveness and buckpassing prevalent?
8. Is the decisionmaking process dominated by a small number of people?
9. Are more or better alternatives proposed under SBM/SDM?
10. Has communication and understanding been enhanced by the process?

The PIE program is strongly recommended because it has a feeder pattern that potentially could involve faculty, administrators, and students working closely on common issues and problems at all school levels. Apparently the only program in which the lead teacher has been adopted by DCPS is in the satellite schools. In the case of the PIE schools especially, the feeder pattern concept should do more than it had through 1989, which was to involve only principals and union stewards. Hence, lead teachers (or *any* teachers) should be involved in planning and implementing program activities. The teaming concept at the middle-school level should be expanded to senior high and the extra effort focused on counseling and advising should be monitored. Extra funds for training teachers in counseling and advising skills are a must.

Funding for students from low-income families to attend college should be made available as an incentive to achieve in high school. National leaders should consider adopting the program begun in New Orleans by businessman Pat Taylor, featured on the television show "60 Minutes" in September 1989. Taylor's effort led to the passage of a bill in Louisiana that provides a free college education to any student who stays in school, maintains a certain grade average, and is a member of a family with less than $25,000 income. Following Louisiana's lead, more than two dozen other states have passed similar programs.

Satellite Schools and Saturday Morning Schools should be analyzed in more detail before being considered for exportation. Many questions remain to be examined. For example, what are the extra costs and benefits of the various programs? Are Saturday schools more effective at the elementary level and, if so, why? Are there any other worthwhile alternatives to Saturday schools, such as additional after-school programs? What are the concerns about expanding satellite schools past the third grade? What are the consequences of this approach for school integration? Does enrollment at the satellite schools reflect the racial and income composition of the workforce of sponsoring employers? If workplaces are better integrated than are neighborhoods, satellite schools may improve school integration.

In the PIE program, the means and methods of achieving the goals of increasing student achievement and reducing the number of dropouts need to be reviewed by all involved. The commitment and the nature of the involvement of the business community needs to be assessed, and the role of the community and parental involvement need to be explored and developed into a plan of action. Better models may exist, but at the present time the Comer School Intervention Model should be considered for implementation in the PIE and in other inner-city schools where parental involvement has been minimal (Comer, 1988). If additional funds are made available to PIE and inner-city schools, development of school-linked comprehensive service delivery systems also should be considered.

Expansion of multicultural programs designed to reduce racial prejudice should be considered. According to principals interviewed, such programs are quite worthwhile. Given the multicultural population of the school district—as well as sporadic social and racial unrest—these programs may need to be expanded.

Finally, given the more difficult nature of an inner-city educational setting, the possibility of a different funding formula for these schools should be explored. Although the PIE schools do receive some additional funds for this program and other special programs, higher per-student funding is warranted if additional counseling and advising are necessary to bring certain students up to or above district averages.

Chapter 13. The Use of High-School Vocational Counseling to Help Students Choose and Implement Career Choices

by

Shari L. Holland[*]

The choice of an occupation is not a simple task, yet many students give too little thought to a decision that will have a major effect on their lives. Many decisions about careers are not made until entering the workforce is imminent. At that point, it is inappropriate to begin an exploration of career options and prepare accordingly. Students entering the workforce after high school may end up taking whatever they can find, a decision that will soon be regretted. However, students cannot make decisions on career choices on their own; they need guidance. The role of the high school guidance counselor is crucial for helping students avoid the mistake of waiting until the last minute to make a decision.

Historically, high school guidance counseling has not been designed to intervene in the process of career selection but has focused mainly on implementing choices. Even this function has been severely limited. For example, students selecting professional occupations are guided into appropriate postsecondary educational institutions, but students selecting occupations that require them to enter the workforce before or after high school graduation receive little assistance in making that transition. Knowing how and why students choose the paths they do will aid guidance counselors in better helping students implement their choices. Simply providing students with a list of occupations that match their expressed vocational interests is much too simplistic and ignores the questions of how and why the students expressed the interests they did.

Why do students aspire to the types of jobs that they do? Why do they end up in the jobs that they do? Why do they often end up in lower-status jobs than those they aspired to? Students' aspirations are generally limited only by their knowledge of what exists and their imaginations. Expectations, however, are shaped and limited by reality—the student's environment and his or her position in it. Gender, race, socioeconomic status, family dynamics, school, etc., all work together to shape a student's expectations of what can be achieved. For women, minorities, and other special groups, these factors too often work to limit aspirations and result in the selection of an occupation radically different from what was aspired to.

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The selection of a career is a complex process that occurs over a long period of time; at the point that career interests are expressed, usually right before graduation from high school, a number of factors over a student's lifetime have influenced that decision. A knowledge of the factors that influence all students, and especially special groups, will allow a counselor to intervene to prevent students from making inappropriate career choices or to encourage students to consider possibilities that they had not previously considered.

Consciously or unconsciously leading students into careers based on their socioeconomic background is a common practice and is very similar to preselecting students into academic or vocational "tracks" in school. Both of these have negative consequences: they limit the students' options and adversely affect minority and disadvantaged students, because their talents are usually underestimated in a tracking system. Because Texas has a large number of minority students who will soon make up the majority of the student population, it is imperative that Texas educators understand the detrimental effects that result from a lack of attention to the career choices of their students.

UNDERSTANDING THE VOCATIONAL SELECTION PROCESS

There are many theories regarding career development and career decisionmaking, and many address the particular needs of minorities. The oldest theories suggest that people are born with a given set of psychological traits that are expressed or repressed based on the interaction of the individual with his or her environment over the course of a lifetime. To determine one's career, selecting a job from a list of occupations requiring those traits will provide the individual with a successful career decision in which his needs are met. These "trait and factor" theories have resulted in a battery of "interest indicators" that attempt to match an individual's interests with appropriate occupations. Perhaps the most widely recognized modern trait and factor theorist is John L. Holland, who assumed that vocational interests are reflections of an individual's personality. Holland developed a structure of six occupational categories, one of which was most appropriate for any particular individual personality. He also developed several instruments for determining an individual's vocational/personality type by matching their interests with vocations characterized by those interests (Holland, 1966).

Developmental theories suggest that the development of a career choice occurs in conjunction with childhood development. Ginzberg, Ginsburg, Axelrad, and Herma presented a developmental theory of occupational choice in 1951 that is still widely regarded today (Ginzberg et al., 1951). There are also sociological theories that explain career choice as a random process over which the individual has no control; the choice is instead determined by environmental events and circumstances.

There are two concepts central to the discussion of career choice: aspirations and expectations. *Aspirations* are what a student dreams of doing, and *expectations* are what the student believes is actually attainable. Aspirations are generally high for all members of the population and are shaped by the jobs that are visible in the immediate environment as well as any additional knowledge students have about occupations. Aspirations can be lower for individuals who have limited experiences with a variety of occupations.

The effect of limited experience on aspirations is illustrated by a survey of Choctaw Indians who are located on a rural reservation in Mississippi. The aspirations of this group tend to be limited to occupations that are visible on the reservation and considered by the Choctaws to be high status but have a much lower status in the view of the larger society. As a result, the Choctaws tend to value technical and skilled jobs higher than the rest of the population and "teacher" is an occupation frequently aspired to, because the teacher is a primary role model on the reservation. A lack of knowledge about other occupations that are visible to urban youth limits the scope of possibilities for these Native American youth (Spencer et al., 1975, pp. 199-223). It may also be possible that the problems facing the Choctaw youth are common to other students in rural or otherwise isolated areas; the degree to which inner-city youth aspire to be forest rangers, farmers, or work in other "outdoor" occupations, for example, is unknown.

Expectations are generally lower than aspirations—a result of reality interfering with dreams. Unfortunately, lowered expectations often result in students accepting jobs far below those they had previously aspired to. A lack of knowledge is a problem here as it was with shaping aspirations. Students may not be aware of their abilities, and they may not realize the preparation and skills necessary to obtain certain jobs (Duane Brown and Linda Brooks and Associates, 1984, pp. 61-93).

Consequently, there is a huge gap between aspirations and expectations—what students want to do and what they end up doing. Looking at the career decisions made by high school students, especially minorities, it is clear that the theories discussed previously are not sufficient for understanding why some groups of students repeatedly select similar occupations and why certain members of the population are over- and underrepresented in various occupations. All of these theories will be useful in explaining the complex set of factors that determine a student's chosen occupation.

If career choice were actually a reflection of what a student really wanted to do with his or her life, how can concentrations of certain segments of the population in similar occupations be explained? Analysis of data from the U.S. Bureau of the Census shows that more Blacks and Hispanics than Whites choose work that is manual in nature, and more Whites choose professional, entrepreneurial occupations than do Blacks or Hispanics. Blacks and Hispanics in professional positions tend to be concentrated in social occupations such as teaching and social work rather than enterprising occupations such as law and management positions. More females than males are found in conventional work such as secretarial, filing, etc. (Arbona, 1989). Williams supports these findings by saying that minorities tend to go into traditional occupations such as teaching and social work, rather than professional and technical areas that are more "economically profitable" (Williams, 1979, p. 176). Is it true that most Anglos want to be in professional positions, and the majority of Blacks aspire to low-wage, low-status jobs? Can it be true that most Blacks aspiring to professional occupations desire to be in social occupations rather than enterprising occupations? Few people would believe that this is the case. Obviously there is more at work in the process of vocational selection than is merely represented by an individual's stated preference.

Aspirations and expectations are affected by a number of factors in addition to a lack of knowledge about occupations and the job market. Other factors include gender, race, self-concept, socioeconomic status, and family dynamics. Usually these factors work together, rather than in isolation, to shape an individual's career choice.

Because of the stereotypes based on sex that exist in our society, there are differences in the types of vocations chosen by men and those chosen by women. Men tend to be attracted to traditional male occupations that are characterized as being manual or in positions of authority. Women, on the other hand, have traditionally been found in roles that are not manual in nature and are not in positions of leadership or authority, such as secretaries, clerks, and other supportive positions. Unfortunately, sex stereotypes are often determined early in life and a great deal of intervention is needed in high school to encourage each sex to consider nontraditional occupations.

The experiences of minority students are often very different from the experiences of the majority and "the average minority student brings into the classroom several differences from the average middle class student in terms of background experience, values, and orientations" (Williams, 1979, p. 176). Many members of minority groups are at a disadvantage not only because of the discrimination barriers they face, but also because they are found in the lower socioeconomic groups. In spite of these differences, however, minority students often have the same dreams and aspirations that other children do, but they have less hope that they will be able to fulfill these desires (Williams, 1979, p. 179; Gottfredson, 1981). This phenomenon is chronicled by Jay MacLeod, who found through extensive interviews with a group of young Black males living in a public housing project that they generally aspire to high-status professional jobs. However, their mediocre performance in school seems to indicate that they do not expect to achieve these high-status jobs. Also, they do not seem to have a clear understanding of the requirements for the jobs they aspire to, further hampering their efforts to "make it" (MacLeod, 1987, pp. 73-111). Paul Bullock also supports the finding that minority groups, specifically Blacks and Hispanics, strive toward that same white-collar, professional careers as the Anglo working and middle classes. He asserts that students select these types of careers because they are high status and prestigious, and they are unaware of other career opportunities that may be more attainable and equally satisfying (Bullock, 1973, pp. 87-97).

A minority student's self-concept also seems to directly affect vocational aspiration. For a variety of reasons, minorities often hold a lower self-image, which results in these students lowering their aspirations. Affective growth is an important consideration in the development of vocational choice (Williams, 1979, pp. 179-80).

The role of family dynamics in career choice is supported by many researchers. Parental influence in particular, in the form of support and encouragement, plays a major role in the decisions of their children, although other members of the family and the student's position in and relationship with the family are also important factors. A study of a heterogeneous group of lower middle class junior and senior high school students in Canada found that "in the absence of adequate parental guidance and support, adolescents may find it difficult to decide what to do after they finish high school" (Leung et al., p. 177). MacLeod also found parental support to be a factor in the attitudes of both Black and White residents of a public housing project (MacLeod, 1987, pp. 49-59).

A family's socioeconomic status is important in that it may determine the factors that are present to influence students. The educational attainment and present occupations of parents, which make a difference in the value students place on various levels of education as well as on the selection of an occupation, differ with socioeconomic status. Students from lower socioeconomic backgrounds seem to benefit a great deal from positive parental influence and tend to aspire to high-level occupations if they receive encouragement and support from their parents; without such input they tend to aspire to these occupational levels less often than other children (MacLeod, 1987, pp. 57-59).

It has been well-documented that a high socioeconomic status is most conducive to encouraging students to strive for high-level and often nontraditional occupations. This can be due to a number of factors, including the fact that the student receives strong financial backing to attain the education level necessary for his or her chosen occupation and that the student is exposed to the various occupational levels represented by the parents' friends (Auster and Auster, 1981). A review of literature on the factors influencing women to enter high-level, nontraditional jobs presents the following profile of a woman choosing to enter such nontraditional careers: she comes from a small family with high socioeconomic status in which both parents work, and the mother is probably in a high-level, nontraditional occupation (Leung et al., 1987).

The first institution that a child is exposed to in his life is his family. The second institution a child experiences is the community in which he lives. Later, a child will move on to school, extended communities of friends, and other institutions. It is safe to assume that experiences with these various organizations will influence his development, values, and eventual life roles. Acknowledging the roles of these various institutions and expanding on the developmental theories of career development, Gottfredson provides a comprehensive and useful theory of vocational selection, incorporating many of the factors mentioned above (Gottfredson, 1981). She agrees that an individual's self-concept is shaped by a number of elements and discusses the importance of gender, social class background, intelligence, and vocational interests, competencies, and values (Gottfredson, 1981, p. 548). The various stages of a child's development and his or her orientation to size and power, sex roles, and his or her internal self correspond to increasing maturity in the development of self-concept and vocational interests. Most of the time people are unaware of how and when these factors influenced vocational choice; they are taken for granted and forgotten.

Over time, people slowly develop a "cognitive map" of various occupations ranked by perceived prestige levels of occupations and their sex-type rating. Gottfredson found that most people rank jobs similarly, thereby resulting in a map that is consistent across the population. However, people see *themselves* in this map very differently, based on the elements listed above. As people mature, they refine and narrow their interests and acceptable preferences, producing a "window" that is superimposed on the cognitive map and represents the range of occupations they will consider when choosing an occupation. (Gottfredson refers to this window as one's social space or the "zone of acceptable alternatives.") For example, the window of a low-income male may be found in low-prestige occupations concentrated in the masculine sex-type rating. A middle-class White female may develop a window encompassing occupations at the medium prestige level in the neutral domain of the sex-type rating (see Gottfredson's occupational map, Gottfredson, 1981, p. 552). Individuals are flexible in choosing an occupation from this window although very rarely will a decision be made to select an occupation from outside the window.

A central idea in Gottfredson's theory is circumscription or the process of narrowing one's individual window of acceptable career choices on the cognitive career map. The process of circumscription takes place over the course of an individual's development and is closely related to the individual's environment: family dynamics, socioeconomic status, race, etc. For example, as children become more aware of the roles of the two sexes, they are likely to eliminate from career choices those occupations that are dominated by the opposite sex. As students become aware of their academic abilities in school, they will begin to narrow their window to correspond to those occupations they believe they are capable of handling.

Another important idea in Gottfredson's theory is compromise, a phenomenon also mentioned in Ginzberg et al. (1951). As an individual develops and learns more about himself or herself, he compromises his aspirations and fantasies in favor of career goals that are more realistic from his frame of reference. Compromise is especially pronounced at critical times when a decision is urgent, such as high school graduation. The realities of the labor market, skill attainment, and economic needs may dictate radical compromise.

Gottfredson believes that compromise is based on *perceptions* of job accessibility and not on what is really accessible to that individual. Also, people will sacrifice those things first that are least important to them and will compromise last those things that are central to one's self concept. For example, people will usually compromise field of work first, then prestige level, then sex-type. Sex-type is usually compromised last because being male or female is central to one's identity. Individuals are also most likely to compromise personal satisfaction for the external characteristics of an occupation such as prestige.

Compromise and the process of selecting an occupation are often based on the most readily accessible information on occupations. Little effort will be made to explore perhaps more valuable information that is more difficult to obtain. Once a career decision is made, the process of compromise and selection is over, even if the optimal choice was not made. Gottfredson also believes that individuals adjust their aspirations to the jobs they have chosen, rather than changing jobs to meet aspirations. In summary, the process of circumscription provides an array of occupations from which to choose; the process of compromise selects a particular occupation from that window.

IMPLICATIONS FOR SECONDARY-SCHOOL VOCATIONAL COUNSELING

These theories of vocational selection give vocational counselors the background information they need to work with students to determine their career plans. Although the choice of a career is a solitary decision, an individual cannot rely on himself or herself as the sole source of occupational information. As was mentioned above, many students have a very limited knowledge of occupations. Clearly, students are in need of information about occupations, and the high school counselor will have the most impact on students. The vocational counselor will have the most impact on students planning to enter the workforce after graduation.

Obviously, the issue of career choice should be addressed before the point at which students usually approach the counselor—in their senior year as they prepare to leave high school. One of the jobs of career counselors is to initiate anxiety about choosing a career earlier, before finding a job is imminent (Harkness, 1976, pp. 13-17). Career education, which provides career information and intervention at all grade levels, would be most effective in making students aware of all of the options available to them and eliminate much of the sex-typing and stereotyping of occupations. An important component of the job of the vocational counselor is to promote the development of career education programs.

Traditionally, vocational counselors have focused on students who are college-bound, spending a considerable amount of time helping them explore possibilities for college attendance. Very little attention is given to students who want to enter the workforce after graduation or who want to pursue other options for postsecondary education, such as apprenticeships or postsecondary vocational education.

Because of demanding work loads and a very high student/counselor ratio in most high schools, there is no time to explore with individual students *why* they have selected the career options that they have. Career exploration usually consists of providing students with interest inventory surveys, consistent with trait and factor theory, while little, if any, time is spent helping students understand why they choose the occupations or window of occupations that they do. A tougher task is to encourage students to consider occupations outside of their window and to help them implement those decisions. An important part of making minority students aware of career options outside of their window is to provide them with positive role models from the community. Minority students are also less likely to be familiar with the many job titles commonly used in interest inventories (Williams, 1979, p. 177).

An excellent example of a minority student with a typical occupational choice who had been encouraged to explore an alternative outside her window is a student who was a member of Jaime Escalante's now-famous Advanced Placement Calculus class at Garfield High School in Los Angeles. She had been inspired by this teacher to continue developing her math interests and abilities in college and had applied to a math program at the University of California at Berkeley. Her second option if she was not accepted into the math department was to become a beautician, an occupation that did not even require a college degree. The selection of a career in math is the anomaly. A beautician is a more typical choice given her background and sex. She should be encouraged to explore other vocations in the same category as a math degree, but, if not, she will most likely become a beautician, a choice that is more comfortable and completely acceptable to her as far as prestige level and sex-typing.

In order to counsel students in their selection of a career path, it is important for the vocational counselor to be aware of potential pitfalls in counseling that can result in tracking minority students into stereotypical occupations:

1. Sex stereotyping and perpetuating other beliefs that may reinforce a student's decision to artificially narrow his zone of acceptable occupations.

2. Misuse or misinterpretation of interest surveys commonly used to discover a student's vocational interests. As mentioned above, many minority students may not be aware of the occupations listed in such surveys. Also, students may interpret test results as the final authority on which occupation they should choose, rather than as merely suggesting

career options. The result is to mold students into the world, rather than allowing the students to shape their own world (Harkness, 1976, pp. 126-136).

3. Not reaching out to students. Students often are not motivated to approach counselors for a variety of reasons: fear of asking dumb or obvious questions, a lack of trust for school authority figures, or simply ignorance of the services available to them. Vocational counseling should not be a passive occupation; counselors need to be aware of the fact that students may not seek them out and reach out to students.

4. Failing to recognize that, like adults, students may face a number of barriers that interfere with their ability to explore all of the options available to them. Students from low-income backgrounds need to deal with peer pressure that may reject the pursuit of good grades and middle-class status. A lack of money, family problems, and other stresses associated with low-income backgrounds must also be addressed in order for a student to focus on his or her vocational needs.

Smoothing the School-to-Work Transition

One of the most important functions of the high-school guidance counselor is to facilitate the transition from school to work for students who have chosen not to pursue postsecondary education. High school students have difficulty making the transition from high school to the workforce or other alternatives to a postsecondary college education, in part because they receive very little counseling to help them explore their options or to direct them into the appropriate courses to prepare them once they have made a decision. The transition from school to work is more difficult than continuing on to postsecondary education. According to one study, students who choose to go on to college expect to explore options there and determine their interests and abilities during this four-year transition period before entering the workforce. Students who opt to go directly into the workforce hope that their interest and abilities will be revealed to them on their first job, a situation that is not conducive to staying long in any one job (Gottfredson, 1981, p. 567).

College provides a transition period from dependence on parents and school to independence and slowly eases the student into adulthood. Students moving directly from high school to work get no such support or protection for their transition and they are usually shoved brutally into a world that is not understanding or accommodating. Expanding the role of high-school counselors to include the responsibility for easing the transition for those not college bound into the adult world and providing support to them for at least a year after they graduate would result in better adjusted individuals and would reduce the negative effects of the "floundering period" discussed in *The Forgotten Half* (William T. Grant Commission on Work, Family, and Citizenship, 1988a, pp. 26-28).

The Labor-Market Connection

Perhaps the biggest challenge high-school counselors face after helping students learn why they want to do what they want to do is directing students into the workforce when they have chosen not to further their education. Paul Bullock found that a majority of kids in both south and east Los Angeles find jobs through friends and relatives. This method of finding jobs creates problems, because, as stated earlier, their friends and relatives do not always have knowledge of or access to high-level, well-paying jobs. Less than 10 percent of these kids found jobs through their schools (Bullock, 1973).

In addition to focusing most of their attention on the college-bound, high-school vocational counselors may not be well connected to the labor market and may be unaware of the jobs available in the area or of the qualifications for those jobs. Thus they cannot direct undecided students into fields and occupations in which there are jobs in the area. A knowledge of labor-market conditions, such as the unemployment rate, is useful in helping students make a decision as to whether or not to enter the labor market or delay entry for further schooling. School counselors also should establish linkages with employers in the area in order to learn what skills employees need to have to be hired.

Students are often left to deal with their decision alone once they have graduated. There is no familiar place to return to if a job does not work out or a student changes his mind about a career choice. Students would benefit from a system that would track them for at least a year after graduation and provide services to them during this period.

Another problem facing youth entering the labor market immediately after high school graduation is the negative stereotypes that employers of have of this age group—the stereotypes are even stronger for minority youths. Employers prefer to hire employees in older age brackets, from about 24-25 on, rather than these younger workers. This preference creates a vicious cycle. Employers will not hire youth right out of high school because they believe they are too immature to stay at a job long, so the only job prospects for high-school graduates are low-paying, low-status jobs in the secondary job market that do not offer advancement. They lose interest in these jobs and quit, moving around in the job market and perpetuating the stereotype. The result is the "floundering period" mentioned in *The Forgotten Half,* when youth wonder from job to job with periods of unemployment until they reach their early-to-mid-twenties when they are more likely to be hired in more permanent jobs (Spring, 1988, pp. 248-52; Rosenbaum, 1989, pp.196-97; William T. Grant Commission on Work, Family, and Citizenship, 1988a, pp. 26-28).

Correcting these shortcomings in the present secondary counseling system will require major innovations. One innovation that would address these issues would be a strong linkage between the school and the local Job Service office. This linkage would be strongest if the local

Job Service office was located in the school, providing students with direct access to its services. However, physical proximity is not as critical as direct access to Job Service information. This linkage is especially crucial for minorities, many of whom do not have any other access to job information. Middle-class students are already well positioned in the labor force and have the opportunity to make many job contacts through parents, friends, and relatives (Spring, 1988, p. 251). Minority youth are at a severe disadvantage but making job information more readily accessible would lessen this disadvantage.

EXAMPLES OF LINKAGES BETWEEN SCHOOLS AND THE JOB SERVICE

The Job Service in the United States developed a poor reputation several years ago by sending inappropriate referrals to employers who listed jobs. Although the Job Service has changed that practice in the last five years, they are still living down their reputation. One of the biggest obstacles to the Job Service is a lack of funding, although their responsibilities have increased significantly. There is neither the money nor the staff to effectively complete all the tasks with which they are charged. Rather than simply matching people with jobs, the Job Service is involved in many research activities including the Economic Research Information service. The Job Service also employs representatives to contact employers to encourage them to list their job openings. The Job Service also conducts I-9 certification (to certify that a worker is legally documented) free to employers, conducts job search seminars, and operates the Communities in Schools program. This latter program is funded by the federal Wagner-Peyser Act and provides money to schools to identify at-risk students and encourage them to take part in the federal Job Training Partnership Act program that places them in jobs in the community.

Only 7 to 10 percent of all available jobs are listed with the Job Service. Twenty-five percent of all available jobs are only posted internally within organizations. Ten percent of the people listed on active roles at the Job Service are already employed. In addition, the Job Service handles mostly entry-level positions and not many professional positions.

Because the Job Service has six applicants for every job opening, there is very little incentive for them to reach out to schools to encourage students to sign up. There were 1.5 million applicants in 1989 for only 300,000 job openings (Froeschele, Interview, March 14, 1990).

Regardless, the Job Service could be a valuable resource to schools by providing available job listings for students as well as general labor market information. Linking education and schools to the job market has been tried at all three levels of government —federal, state, and local. The federal government experimented with a number of school and labor market linkage programs during the Carter administration when youth legislation was popular. One initiative, the Youth Employment and Demonstration Projects Act of 1977, attempted to use jobs as an incentive to keep students in school and provide them with jobs when they graduated. One of the programs that resulted from the act was the Youth Incentive Entitlement Pilot Projects (YIEPP) that tested whether or not the incentive of summer jobs and jobs after graduation would encourage students to stay in school and as a result improve their future employment prospects. The findings showed that minority youths actively sought job opportunities when they were available, and their workforce participation rates increased during the demonstration, as did their employment and earnings. These benefits seemed to continue, at least for a short time, after the conclusion of the program. It was found, however, that the programs had little, if any, effect on school attendance. Most of the participating youths were in school at the time and were most likely to stay there even without job opportunities. Also, young Black youths benefitted the most from the programs (the sample of Hispanic youth was too small to draw any conclusions) (Gueron, 1984; Farkas et al., 1984, p. vii). These and other experiences with programs linking education and jobs during the Carter administration demonstrated the need for integrating jobs with educational reform (Spring, 1989, pp. 4-17).

A local program that links secondary education to the job market is the Boston Compact in Boston, Massachusetts. As part of the Boston Compact, employers and the schools have joined together to develop a school-based careers service. Graduates who meet specific criteria are selected to be interviewed for relatively high-wage jobs with opportunities for advancement. A career specialist is hired by the Boston Private Industry Council to work full-time in the high schools to link students with information about the Boston job market, and develop relationships with employers who have jobs to offer Boston high school graduates. These career specialists announce jobs in the classroom, help students with job applications, help with interview preparation, and arrange for interviews (Spring, 1988).

An example of a state program that links secondary education to the job market is the California Compact, modelled somewhat after the Boston Compact. According to a 1989 progress report, "the long range goal of the compact is to provide incentives and support so that every student in the state is prepared to enter a career or postsecondary institution upon graduation from high school" (Weisberg and Abbott, 1989, p. 3). In order to offer support to students who will be entering the workforce after graduation, the compact requires the involvement of the business community and the state Job Service offices in planning and implementing local programs. Career specialists are hired by the local Private Industry Council Staff (half of the salaries for these positions are paid by the schools in which they work) to provide transition services for students and coordinate placement of students in job openings, as well as other job-related services. The plan also calls for schools to inform employers when students have met achievement criteria that qualify them for preferential hiring programs. Employers have agreed, in the terms of the compact, to consider these students for positions in their companies (Weisberg and Abbott, 1989, Appendix A).

SWEDEN: AN INTERNATIONAL EXAMPLE

An international example of an effective school-to-work transition system can be found in Sweden, where the employment services are closely tied to the schools. There are many differences in labor-market policy between Sweden and the United States, and one of the major differences is that the Employment Service (ES) in Sweden has a more favorable public image and is more effective. Employers are required by law in most instances to register job openings with the ES, which means that the ES covers about 90 percent of all vacancies. In addition, 80 percent of all unemployed job seekers are covered. In the United States, on the other hand, only a very small portion of all job vacancies are covered by the Job Service (Marshall, June 1989, p. 7). The Swedish ES is able to provide comprehensive information to job seekers about job openings in their area as well as to provide information about training programs and additional education. Training and education is an integral part of the Swedish employment system, and individuals needing training before entering an occupation can get information on appropriate training programs through the Employment Service and receive a stipend while participating in training.

Students are directly served by the Employment Service, and there is a strong linkage between the ES and the educational system. Until students turn 18, they are tracked by the schools, which aid them in finding employment with the cooperation of the ES. Once students reach 18, the ES service becomes responsible for their training and job placement. Several resources are tapped before it becomes necessary to pay unemployment compensation. Students may be placed in jobs that may or may not be subsidized by employers, or they are placed in training programs or public-works projects. Regardless of where the youth is placed, he or she is not sent into the world alone and without support, as students are in the United States.

VOCATIONAL EDUCATION IN TEXAS

The vocational education system in Texas has suffered from a lack of priority status in relation to other educational programs and a corresponding lack of funding. The lack of state-wide funding results in large variations in the degree to which vocational education is delivered across the districts. Some districts have excellent, comprehensive vocational programs while others do not. In Texas schools, there are three tracks: honors, regular academic, and vocational. The vocational program has been severely limited because of the academic requirements to graduate that were increased in H.B. 72, passed by the Texas Legislature in 1984. The bill effectively limited the selection of vocational courses by forcing students to take more academic courses to graduate. There is also a perceived antagonism between the vocational educators and the academic educators when they really should be working together—vocational education students cannot succeed without reading, writing, math, and other academic courses.

Many districts offer a comprehensive selection of vocational courses from home economic programs to industrial electronics and computer-aided design. Large districts with several high schools offer different programs in each school and allow students to attend the school that offers the program they are interested in. Small districts, such as Socorro Independent School District in El Paso, offer a broad selection of programs in the one high school in the district. Some districts allow students from neighboring districts to attend their high school if space permits.

In addition to vocational-education teachers, some districts also employ vocational counselors and placement coordinators to aid vocational students in the selection of a career and help them implement their choice by directing them to the appropriate vocational classes and employment after high-school graduation. However, the number of vocational counselors and placement counselors falls far below the number necessary to adequately meet the needs of students who will enter the workforce after graduation. There are over 1,000 school districts in Texas with a total of nearly 1,000 high-school campuses; however, there are only 105 officially designated vocational counselors and only 25 placement coordinators. This number is slightly misleading. Many vocational instructors fulfill these roles in schools that do not have an official position, but with their teaching responsibilities they obviously cannot devote adequate time and attention to all of the students seeking guidance in the selection of careers and jobs. The school districts that do offer a comprehensive vocational guidance program are experiencing great success in moving their students into the workforce after graduation. Interviews with districts offering comprehensive vocational programs reveal great dedication and energy devoted to vocational education students. It is unfortunate that Texas does not provide the funding to make these services available to *all* students in the state.

The Vocational Guidance System

According to a handout from the Texas Education Agency (TEA), vocational guidance in Texas has as its goal "to provide high quality professional programs of activities which assist students and adults in selecting and pursuing vocational education which is suited to their individual needs, interests, and abilities" (TEA, "The VocationalGuidance/Counseling Program," undated handout). To meet these goals, there are three components to the vocational guidance system in Texas: 1) Career Investigation, a one-semester course for 7th and 8th graders that assists students in exploring various career options, 2) vocational counseling, and 3) job placement coordinators that specifically aid students in locating jobs after they have completed the vocational education program and graduated from high school (TEA, "The VocationalGuidance/ Counseling Program," undated handout)). Unfortunately, not all districts are able to offer all three components, so various combinations of the three are offered across the state.

Career Investigation. Career Investigation is generally an elective course; few districts require it for all 7th and 8th graders. Teachers of the course are required to take a 15-hour certification program offered at various state universities across Texas. The course is designed to make students aware of their interests, aptitudes, abilities, and values. They learn about the variety of occupations that exist as they study 15 occupational clusters, and they also learn how to locate information about various occupations. Goal setting and planning are emphasized to make students aware of the courses they will need to take to achieve their occupational goals. Many teachers invite guest speakers from the community to come into the classroom to talk about their jobs.

Socorro Independent School District, the third largest school district in the El Paso area, offers a unique twist to the Career Investigation curriculum. Socorro ISD is a very poor school district and, in fact, was one of the original plaintiffs in the *Edgewood v. Kirby* Texas Supreme Court case that in 1989 declared the school finance system unconstitutional. Socorro ISD currently has one high school but by 1992 will have two. There are currently 3,100 students attending the high school, of which 2,900 are enrolled in the vocational education program that offers approximately 52 different classes.

Rather than being optional, every 8th grader in the district is required to take Career Investigation and the curriculum in this district differs from that offered in the rest of the state. The Socorro program is a hands-on, practical program that allows students to actually work in 29 different work stations in areas such as masonry, data processing, electronics, sheet metal, and needle trades. The 29 work stations are related to over 100 different jobs, so students gain exposure to a variety of potential occupations. Students also complete standard "paper and pencil" exercises to learn about their skills and interests, but it is the hands-on experience that will give them the most knowledge about possible career options (Cooper, Telephone interview, April 23, 1990).

Vocational Counselors. The second component of the vocational guidance system in Texas is the vocational counselor, who is specially trained to meet the needs of students in the vocational programs. A handout from TEA states that vocational counselors are expected to provide occupational information to students, assess students' interests and capabilities, provide career counseling and guidance activities to help students plan and achieve career goals, provide job placement assistance to students, and follow up on students one year after they have graduated to see what they are doing (TEA, "The VocationalGuidance/Counseling Program," undated handout)).

In preparation for these responsibilities, vocational counselors must be certified in a TEA-approved program. Vocational counseling certification programs are offered on nine state university campuses across the state. Certification requires completion of a thirty-hour program if the individual already has a master's degree, otherwise nine additional hours are required.

Upon completion of the certification program, the vocational counselor is eligible for a professional counseling or professional vocational counseling degree. According to the director of the vocational counseling certification program at North Texas State University in Denton, many individuals in the vocational counseling certification programs became interested in getting this certification after completing the Career Investigation certification program. Three of the courses required for the Career Investigation certificate are also required for counseling certification, so completing both programs requires only an additional three courses (McLeod, Telephone interview, April 18, 1990).

At North Texas State, 8 people will be completing their vocational counseling certificates this spring; approximately 25-35 people go through the program each year. Because the participants in the program are also teaching at the same time, classes are offered in the evenings and on Saturdays to accommodate them. In addition, there is an accelerated program in the summer that offers 12 hours in two summer sessions.

Job Placement Coordinators. The third component of the vocational education system in Texas is the job placement coordinator. The idea for creating the position of job coordinator was conceived in the late 1970s by the current director of the vocational counseling certification program at North Texas State University. He saw a need to focus on assisting students in finding jobs after they graduated, so he initiated a pilot program in thirteen districts across the state. The program was continued after the end of the pilot program, but there are currently only 25 placement coordinators, far less than are needed to be effective. In addition to there being so few placement coordinators, many of the individuals holding these positions have teaching responsibilities. Placement coordinators are not required to have special certification but are often vocational instructors who have knowledge of the job market in their area and have extensive contacts in the community. According to one vocational coordinator, it is the vocational instructors who are ultimately responsible for helping their students to locate jobs after graduation. Overall, Texas offers its students a haphazard system of job information and placement, but those involved in vocational education are working to change that.

Labor Market Information

One of the most common criticisms of vocational education is the lack of knowledge about the labor market among those involved in counseling students about jobs. However, interviews with individuals involved in vocational education across Texas did not support that criticism. Vocational educators seem to be well aware of the need to be knowledgeable about the labor market, both to better inform students about careers and to focus their vocational curriculum on the jobs most in demand in their area. The vocational counselor certification program incorporates labor market information into the curriculum and makes vocational counselors aware of resources available to them that will provide them with labor market information for their particular areas.

Each school district has a vocational education advisory committee composed of vocational instructors, vocational counselors, placement coordinators, administrators, and employers from the community. This advisory committee meets three times per year to share labor market information and discuss the vocational curriculum offered in the district. In addition to this district-wide advisory committee, each vocational education program in a school district has an advisory committee made up of vocational instructors in that program and employers from the community who are in a related field. This advisory group meets as needed to discuss issues concerning labor market information and curriculum for that particular program.

All of the schools surveyed for this paper have access to a computerized listing of occupations that can be used by students and instructors. Students are usually introduced to the program in their Career Investigation class and are encouraged to access the program at any time.

Another source of labor market and career information available to vocational counselors, placement coordinators, instructors, and students is the State Occupational Information Coordinating Committee (SOICC) located in the Texas Employment Commission (TEC) office in Austin. Each state has a SOICC and there is a national counterpart, NOICC. The national and state organizations were created by federal legislation in 1976 when the U.S. Departments of Labor and Education decided to coordinate some of their programs. The Texas SOICC has been operating since 1978 and, with a staff of eight, is the second largest SOICC in the country (only Illinois is bigger) with a staff of eight and a $1 million budget. Most of the budget comes from the federal government, but they also do consulting for other state agencies to supplement the federal grant.

Housed in the TEC building, the SOICC comprises five member organizations: the Texas Employment Commission, the Texas Education Agency, the Texas Department of Commerce, the Texas Rehabilitation Commission, and the Higher Education Coordinating Board. SOICC has two primary goals: to provide information on various careers and to provide information on the labor market. The SOICC Occupational Information System (OIS) provides information on the labor market. Career Information Delivery (CID) provides information to students and counselors on specific occupations through GIS, a computerized guidance system that lists information about hundreds of occupations and is virtually an automated system of the *Occupational Outlook Handbook*. Many school districts, as well as 15-20 community colleges, provide on-line access to GIS for students and instructors. SOICC has a toll-free number that anyone can access and request information. Ninety percent of the callers are students in vocational classes. SOICC also promotes the publications published by member agencies that are relevant to its mission.

SOICC takes an active approach to making its services known to vocational counselors, instructors, and administrators. An SOICC employee travels around the state to contact vocational counselors and make them aware of SOICC materials. Once a year, a package is sent out to all counselors that includes information about SOICC and the services and products that are available through them.

SOICC provides a three-day seminar for vocational counselors called Improved Career Decision Making (ICDM). Twenty of these seminars have been conducted over the last four years. There is space for about 35 counselors at each session. According to the seminar leader, the counselors that come to the seminars are very enthusiastic. They are really concerned and want more knowledge to do their job better. One of the components of the the seminar is to teach the counselors how to introduce labor market information into vocational counseling.

Another source of information for vocational counselors is the Job Service, which conducts research through its Economic Research Information service on local labor market information.

Recognizing that labor market information is a critical component of vocational education, the Texas legislature in 1987 established a system of regional planning for vocational education. In order to develop a quality workforce, a system of regional planning was needed to bring together educators and employers to ensure that vocational programs were preparing students for skills employers needed. Twenty-four Quality Work Force Planning Regions (with the same boundaries as current state planning regions) were mandated to meet this need. In response, the Texas Education Agency, the Texas Higher Education Coordinating Board, and the Texas Department of Commerce jointly sponsored nine regional planning pilot projects in the state. Statewide implementation of quality workforce planning was in place by September 1990.

Each region works autonomously and is charged with analyzing job opportunities and related education and training needs for those jobs, determining priorities for vocational-technical education programs in each region, and establishing and updating a regional labor market information system. The region must also identify priority occupations within regional industries and develop programs and activities relating to those targeted occupations. The information gathered is disseminated to vocational educators and used to focus vocational curriculum on careers and occupations in demand in the region. Each region has a Quality Work Force Planning Committee that carries out these tasks (TEA, undated handout).

The North Central Texas Regional Quality Work Force Planning Committee, which includes the Dallas/Fort Worth metropolitan area, is called Interlink. Interlink is governed by a 52-member board of directors whose membership is evenly divided between educators and employers. The board meets quarterly while its executive committee meets monthly. The program director of Interlink is a Southwestern Bell employee who is on loan from the company. The company pays her salary and provides office space for her and a clerical employee. Interlink was formed in 1987 to vie for one of the original nine pilot program grants, but did not receive funding. Interlink began operation on its own with a volunteer staff and received state funding the following year (1988). The program has been incorporated because the board of directors plans to continue operating after the pilot program funding ends in 1991.

In addition to the board of directors at Interlink, more than 200 volunteers are active in the organization, consisting of representatives from business and education. The volunteers are formed into seven task forces, each with a different mission. The primary focus of Interlink in 1989 was to produce a listing of occupations that will be in demand in the Dallas/Fort Worth area through 1995. In 1990, Interlink focused on three occupations and conducted task and skills analyses of each of the occupations with the intention of working with vocational educators to match vocational curriculum to the needs of those occupations. Among Interlink's seven task forces, three are conducting the skills analysis previously described, another task force is studying the literacy problem and the providers of literacy training, another is looking at the dropout problem, and the other two task forces are involved in developing ways of communicating the information from the occupational listing to teachers and students. The response from both educators and the business community to Interlink has been positive (Gallagher, Telephone interview, April 25, 1990).

Following Up on Students after Graduation

Vocational students are urged to find a job on their own after graduating from high school if they do not continue on into postsecondary education, but vocational program graduates in Texas who do not have a job when they graduate are encouraged to use the resources available to them at the school, including the time of the vocational counselor and placement coordinator until they are employed. Students must take the initiative to use the services—they are not contacted by the counselors or placement coordinators—but no data exist to determine how many students use the services after graduation.

Vocational counselors are required to keep data on students one year after they graduate to determine what they are doing. The most recent telephone survey of May 1989 vocational graduates in Corpus Christi made in January 1990, for example, determined that 24 percent of the students are in the workforce in jobs for which they were trained, 15 percent are in the workforce in jobs for which they were not trained, and 44 percent are pursuing some type of postsecondary education or are in the military. The remaining 17 percent were unemployed, not in the workforce, or could not be found (Ottinger, Telephone interview, April 24, 1990). Similarly, of the 717 May 1989 vocational graduates in Garland Independent School District, 34 percent were employed in a field for which they were trained, 14 percent were employed in a field for which they were not trained, and 45 percent were pursuing additional education. The remaining 7 percent were unemployed, not in the workforce, or could not be found (Knight, Telephone interview, April 20, 1990).

CONCLUSIONS

Some innovative things are happening in vocational education in Texas. Unfortunately, at this point the programs reach a very limited number of students. The quality of the vocational education programs that exist appears to be very high and there does not appear to be a problem in gaining access to and using labor market information to make decisions about the vocational education curriculum and to aid students in finding jobs. The need, then, is to expand the programs to reach all students. Specifically, a full-time vocational counselor and placement coordinator need to be in every high school in the state. Additional state funding will be required to pay their salaries, but the benefits will be an increased number of students selecting career options that they are happy with and suited for and moving into jobs for which they are trained, greatly increasing the likelihood that they will remain on the job and avoid periods of unemployment and "floundering" from job to job. The Texas labor market will be the greatest beneficiary of better prepared and more stable employees.

Chapter 14. Improving the School-to-Work Transition of Minority Youths

by

Robert W. Glover[*]

Although the United States stands out among all industrialized nations in its emphasis on higher education, it has the least well articulated system of school-to-work transition in the world for high-school students who do not go on to college (William T. Grant Commission on Work, Family, and Citizenship, 1988a, pp. 26-28; Berlin and Sum, 1988, pp 22-23; GAO, 1990, pp. 33-41; Commission on Skills of the American Workforce, 1990, pp. 46-47; Osterman, 1980; Osterman, 1988, pp.111-114). Almost half of each graduating class—roughly 1.4 million young people each year—directly enter the labor market without enrolling in college. Yet school counselors spend a disproportionate amount of their time counselling youth about going to college. A survey by the Educational Testing Service in 1981 found that almost half of all high-school students said they have never talked with a counselor about occupations and only 6 percent of all high-school counselors spent more than 30 percent of their time helping students to find jobs (Chapman and Katz, 1981). Likewise, the public employment service, which once provided job counseling for as many as 600,000 high-school students at its peak in 1963 has lost its funding for such activities (Barton, Spring 1991, p. 50).

The lack of a systematic bridge between school and work most adversely affects poor and minority students. They have access to few resources or information networks to obtain mainstream jobs. In labor markets, word-of-mouth contacts among people who know and trust each other matches jobs with jobseekers. Many middle-class parents have the contacts and resources to be good job developers for their children. However, low-income Black and Hispanic parents are not so well positioned. The problems often are compounded by powerful negative stereotypes which both the youths and the employers may have about one another. Employers often are influenced by what they see in the media about inner-city youth. Likewise, many minority youth have their own negative ideas about industry hiring practices. In addition, the location of available jobs may pose significant problems for inner-city youth and minority youth in isolated rural areas where they do not have access to transportation to the available employment.

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Data from the U.S. Bureau of Labor Statistics on the employment status of recent high-school graduates confirm that Hispanics and Blacks are in a particularly disadvantageous position. In contrast to 14.9 percent unemployment for Whites, Hispanics experienced a 29.1 percent ate and 50.3 percent of all Blacks seeking work were unemployed. In addition, more Black youths were out of the labor force and thus not counted as unemployed. Indeed, only 28.5 percent of Black male high-school graduates had jobs in October after graduation, whereas 53.5 percent of White high-school graduates did (U.S. Bureau of Labor Statistics, 1989, p. 2). The realization that relatively few minority youth obtain a job even if they study hard and obtain a diploma provides little incentive to excel in school.

Problems in making the transition from school to work are not confined to minorities or the poor. Negotiating the labor market is a difficult task for many American youths who have decided not to pursue a baccalaureate college degree. In other countries youth are provided occupational counselling, employment information, and job placement through local schools or labor market authorities, and employers take an active role in youth formation. In contrast, the United States has no system for getting youths from school into work, and the employer community takes little responsibility.

In essence, we need to build ladders from school to work that are not in place today and then assure that minorities and the poor can climb the rungs of those ladders. America needs a systematic approach to resolving the problems of making the school-to-work transition for all students. Any approach that limits eligibility exclusively to minorities or the poor is self-defeating because it will become stigmatized in the eyes of the employer community. Minorities and the poor can be assisted best through a targeting strategy that puts the program in place first in school districts with heavy concentrations of minority students and by including special outreach provisions to assure that minorities and youths from poor families are served.

AMERICAN EMPLOYERS AVOID RESPONSIBILITY FOR YOUTH FORMATION

America's preferred employers—those who offer good wages, attractive benefits, and career potential—do not hire high-school graduates immediately after graduation. Although these firms employ many high-school graduates, they prefer to wait until job applicants are in their mid-twenties, "mature and settled down," and have accumulated some work experience. In effect, through this behavior, our best employers are shunning responsibility for the formation of youth. Their delay in hiring breaks the connection between achievement in school and rewards in the workplace and results in many youths spending five or six years floundering in jobs that offer opportunities neither for learning nor for advancement (Osterman 1980; William T. Grant Commission on Work, Family, and Citizenship, 1988a, pp. 26-28).

Recent research by John Bishop and James Rosenbaum has demonstrated that effort and achievement in high school are not effectively rewarded for students who do not plan to go to college (Bishop, 1989a, pp. 6-10, 42; Bishop, 1989b; Rosenbaum, 1989, pp, 193-97; and Rosenbaum 1990, pp. 10-15,40,42-43). Few employers ask for high-school transcripts, and most that do request them find that they cannot obtain them on a sufficiently timely basis to make hiring decisions. The high-school diploma appears to be valued by employers mainly as an indicator of persistence rather than as a measure of achievement. Although a high-school diploma makes a big difference in earnings over the long run, it appears to make little difference in the type of employment and wages offered in initial jobs after high-school graduation. Because many youths have a short-term time horizon, near-term employment prospects offer much more powerful incentives than do abstract arguments about lifetime earnings.

The contrast with the behavior of Japanese and German employers could not be sharper. Japanese employers prefer to hire youths who have no work experience at all, and they solicit help from schools and teachers to find the most qualified youths. Nearly a quarter of German employers shoulder a major responsibility for the formation of youth by sponsoring apprenticeships. Even the largest and strongest firms such as Mercedez Benz and Siemens hire 15-year-olds as apprentices and offer them three years of structured training, in collaboration with schools. Notably, major American firms such as Ford and Dupont that fail to hire American youths have among the strongest apprenticeship programs for training German youths in their European operations.

Unless American businesses begin to assume greater responsibility for the formation of youth, German and Japanese youths will continue to have a head start. A major source for motivating achievement in school will be missed, and as a consequence, our youth and the American economy will suffer.

By hiring high-performing graduates, corporations can help reconnect student effort and achievement with rewards and have a profound effect on educational performance. In the process, schools and businesses must confront a fundamental question: what indicators of achievement should qualify youths for good jobs?

American employers currently are not communicating what they need very clearly either to schools or to students. Employers must identify the skills they require of job applicants and reach agreement with schools about how to assess and certify those skills. Equally important, employers must act to hire youths with such skills, once certified. Surveying employers to find out what skills they say they need is not enough; the effort must be tied to action. A promising vehicle for achieving employer commitment to action is the compact, an idea that started with the Boston Compact.

THE BOSTON COMPACT: A FOUNDATION

The problem of bridging the transition between school and work requires a systematic regional and community response. One promising approach is to organize job collaboratives or compacts between businesses, schools, and community leaders along the lines of the Boston Compact (Spring, 1989, pp. 4-17; Spring, 1987, pp. 3-16; Spring, 1983, pp. 205-13). The essential mission of compacts is to stimulate academic achievement and career readiness among students. Each of the parties in the compact agrees to commit themselves to a set of measurable goals or outcomes and to a system established for evaluating each through time. Participating students agree to maintain certain standards of performance. Specifically, they must obtain certification from two teachers that they are working hard, must stay out of trouble with the law, and must maintain at least an 85 percent attendance level in school. In return, businesses agree to preferential hiring of students who meet the specified standards. For their part, school authorities agree to make specific improvements as well.

Begun in 1982, the Boston Compact brought together the resources of the public schools, businesses, universities, labor unions, and the mayor's office to improve student academic achievement and work preparation in exchange for increased opportunities for employment and higher education. A primary aim is to provide students with incentives to stay in school and perform well in order to be eligible for jobs and financial assistance for higher education. The compact is a formal agreement that specifies measurable commitments that each entity will make to improve educational performance, school attendance, and post-high-school opportunities. The original Boston compact was signed by the mayor, the school superintendent, the president of the school committee, the president of Boston University, the chairman of the Coordinating Committee (a powerful local business organization), and the chairman of the Boston Private Industry Council.

When the compact was initiated in 1982, Boston public schools had an annual dropout rate of 16 percent. Less than 60 percent of any entering high school class remained to graduate. Under the terms of the compact, the schools agreed to increase the graduation rate by 5 percent annually, to increase by 5 percent annually the number of graduates who enter employment or enroll in higher education, and to assure that by 1986 all graduates met minimum competency standards in math and reading.

Unfortunately, Boston schools were not able to perform as promised. Six years after the original signing of the Boston Compact, the dropout rate remained unchanged, and the goals for increases in achievement scores have not been met. William Spring, a founder of the Boston Compact, attributes the reason for this disappointment to the lack of availability of funding for remedial education at the high-school level (Spring, 1988, p. 11). If students are coming into high school at two or more grade levels behind in reading, little that can be done for them, given the current organization of education in Boston. It will take more than the availability of jobs to turn around the dropout situation; it will take a major efforts to improve remedial education.

In fall 1988, the business community initially refused to reauthorize the compact, citing the need for greater improvement in schools. Rather they negotiated for fundamental school change and accountability. Compact II, signed in spring 1989, added new goals for the schools, including decentralization through site-based management and a process for making individual schools accountable for their own success or failure (National Alliance of Business, 1989, p. 4).

For their part, businesses agreed to offer specific numbers of summer jobs and part-time jobs after school for in-school youth and to reserve a specified number of jobs for youth graduating from Boston high schools. Labor unions also joined, pledging 5 percent of the openings in apprenticeship programs to Boston school graduates on condition that the schools offer union-designed training curricula. Each participating employer agreed that a given number of their entry-level positions would be made available to high school students/graduates and would be held open long enough so that referrals from the Private Industry Council and interviews could take place. While no student is guaranteed a job, each knows that there is a job available if he or she is successful in the interview.

The compact was later expanded to include local colleges, which agreed to increase their enrollment rates of Boston public school graduates by 25 percent. Colleges and universities are assisting with counselling, scholarships, and tracking the success of high-school graduates in college. To date, over $13 million has been contributed to an education fund including scholarship assistance for those accepted at college.

The Boston Compact has been most successful in gaining jobs for its high school graduates. Over 900 businesses provide job opportunities for students. In 1989, 1,107 graduates (in a class of just under 3,000) found full time jobs averaging $6.75 per hour through the compact (Commission on Skills of the American Workforce, 1990, p. 107). Reportedly, more than 85 percent of all the youths placed have been satisfactory employees. Perhaps most impressive of all, employment of Black high-school graduates reached parity with White high-school graduates at a level that is substantially higher than the national averages, as indicated in Table 13. Youth unemployment rates in Boston are significantly lower than in other places, and the difference between the proportions of Black and White unemployed youth is almost negligible—an achievement virtually unparalleled in any other major city (National Alliance of Business, 1989, p. 3).

Even though Boston's booming economy during the 1980s was a helpful factor, the compact's accomplishment in increasing employment for Black high-school graduates to the level of White high-school graduates is worthy of notice. The Boston project focused on a fundamental difference between middle-class White youth and youth from poor Black families: namely, White middle-class youths have better information and networks to obtain jobs than do Black youths from poor families. Young people from poor homes lack the network of employed fathers and mothers, aunts, and uncles that smooths the transition for the better connected. In an attempt to build a bridge between school and the business community, Boston copied the model of the British Careers Service, an arm of the local educational agency with responsibility for counselling and job placement, now a part of the Youth Training Scheme.

Initially funded under a grant from the Edna McConnell Clark Foundation, the Boston Careers Service placed a staff member in each of the high schools to counsel students, to offer training in interviewing and other preemployment and work-maturity skills, and to conduct job development and job matching. While several larger firms have come forth with job commitments on their own, jobs from smaller employers have to be solicited by Careers Service staff. Once a week, Career Service staff meet to discuss the student participants, to exchange information on jobs and entry requirements, to match students with jobs, and to refer them.

Table 13. Number of Individuals Employed among Every 100 June Graduates of High Schools (Employment-to-Population Ratios) October 1985

	Blacks	Hispanics	Whites
Nation	28	36	52
Boston	60	40	62

Sources: U.S. Bureau of Labor Statistics (national data). Telephone survey of graduates made by Boston PIC staff.

The Careers Service proved valuable to the success of the Boston Compact. Thus, at the end of the two years of Edna McConnell Clark Foundation start-up funding, the expense of the Careers Service program was continued under joint funding from the Boston Private Industry Council and the Boston public schools.

The experience in Boston has revealed important essentials that should be incorporated into any program to assist youth in making a successful transition from school to work. Youths—especially those from disadvantaged families—must have access to information and job networks in order to find employment. Such networks can be established on an institutionalized basis within the high schools through establishing Careers Services or similar functions. Assistance from an intermediary—including training in effective job search techniques—is an important component. Job-related standards should not be ignored in student recruitment and selection, but special efforts are needed to articulate relevant standards on a clear, objective basis and communicate them to schools and youths. Incentives are important for everyone. For students, it must be unmistakably clear that school pays off in terms of economic opportunity.

Establishing commitments to performance goals with measurable objectives is critically important. It is equally important to regularly measure performance against those goals. Students need to be contacted beyond graduation to find out how well the compact is working and to provide feedback in order to improve future operations.

Of course no uniform prescription is appropriate for all areas. Each area must be adapted to the needs, resources, and circumstances of both the employers and the youths in the community served. Successful compacts are not just single programs—rather they become frameworks to organize a wide variety of initiatives or partnerships. Such efforts can be directed to refine job entry requirements, to foster the availability of effective mentor arrangements between youths and adults, to create meaningful training and career paths for youths, to improve occupational counselling, and to offer training and education on a joint basis between schools and worksites, thereby putting learning into a practical context that motivates students.

IMPORTANT DESIGN FEATURES OF A COMMUNITY-WIDE SCHOOL-TO-WORK INITIATIVE

The design for the systematic yet flexible model envisioned here is based on several premises. The first principle is to connect achievement in school with rewards in the labor market. Incentives are important for everyone. Students must know that achievement in school pays off unmistakably in terms of economic opportunity.

Second, no single program or training approach can meet the needs of all youths or of all employers. Thus, it is important to make available a variety of training and learning opportunities, including work-based learning options.

Third, a system needs to be available for all youths rather that a series of short-term demonstrations for special populations. The initiative must be institutionalized with regular financing and thus not be dependent on *ad hoc* grants for continued support. It requires a sustained commitment from the business community who must see that it is in their own interest. To avoid stigmatizing the participating youths, the initiative must not be reserved exclusively for disadvantaged populations. Of course, helping minority youths and the disadvantaged is of key concern, but there are better ways to help assure their participation than by making poverty an eligibility criterion for participation. Targeting can be achieved by selecting school districts with heavy enrollments of poor and minority students and by building in strong recruiting and outreach components to assure that poor and disadvantaged youths are well served by the system. Also, an integral part of any school-to-work system is to serve those who have dropped out of school and who have returned to second-chance learning programs.

Fourth, information is a key element of the proposed system in several respects. To manage the system properly, accurate feedback is needed from youths after they leave school. In order to provide the community with information about its young adults, an information system should be developed to follow young people who have left high school, graduated, and entered the labor market or post-secondary education or training programs. Such data are not commonly available now, and they are essential for accountability and for monitoring progress against goals. Information also is needed on the performance of various public and private training providers, including proprietary schools, community colleges, and other postsecondary training options. Youth need to know about the efficacy of various training options after high school to make informed decisions about which path to take. Such data should be collected regularly and made conveniently available to students and their parents.

Fifth, if adolescents are expected to be in a position to make decisions about careers, providing better and earlier occupational information and guidance is essential. Additionally, to be successful in the job market, students need better information on how to get and keep a job. Students must be able to present themselves on paper and in person; they must have opportunities to practice their interviewing skills.

Sixth, the vocational options need to have a strong academic content. Critics of vocational-technical education often draw a false distinction between "vocational" and "academic" education. Properly taught, technical education always has required considerable "academic" content—and technical education will contain even more academic content in the future as workers will need higher theoretical and conceptual skills. Indeed, most abstract and "academic" subjects can be taught more effectively through hands-on experience than through classroom lectures. In fact, learning probably is always more effective with the unity of thought and action. The importance of learning by doing has been rediscovered in a variety of recent research (Resnick, 1987, pp.13-20 ; American Association for the Advancement of Science, 1988, p. 146; Pat Hutchings and Allen Wutzdorff, eds., 1988).

Finally, the system should not foreclose the option to go to college. Although students may identify themselves as "non-college-bound" in high school, many subsequently may decide to pursue further schooling. Attending college is not a one-time only decision. In view of the need to make lifelong learning a reality, it is best not to close the options unnecessarily for any youngster. Participation in the program should not preclude college attendance. On the contrary, a major objective of the initiative should be to foster lifelong learning of all types.

BUILDING EFFECTIVE TRAINING PATHS FROM HIGH SCHOOL TO JOBS

A compact with measurable outcomes and a good information base offers the foundation for a community school-to-work initiative. Under its umbrella, a variety of effective training paths can be developed from high school leading directly to jobs and careers. No single training approach will suit the needs of every youth, every employer, or every occupation. The best arrangement may be to establish a portfolio of proven options including apprenticeships, cooperative education, vocational academies, tech prep programs, along with other skill development models that have not yet been envisioned.

Apprenticeships

Using apprenticeship to assist disadvantaged youths is not a new idea. The British Statute of Artificers in 1562 included provisions for the indenture of orphans, paupers, and the sons of the indigent in order to prevent their becoming public burdens. The concept was further expanded by the Poor Law of 1601 (Douglas, 1921, p. 25-26). In the United States, Abraham Lincoln, as a freshman congressman, introduced legislation freeing the slaves in the District of Columbia, providing a temporary system of apprenticeship for them (Douglas, 1921, p. 22).

Conceptually, the apprenticeship model offers many advantages in remedying the employment problems of youth. First, unlike most other forms of training, apprenticeship provides a built-in opportunity for youth to earn while they learn. Second, its mode of training—practical learning by doing—has natural appeal to many youth who are weary of conventional classroom instruction. Third, the training occurs in a real job setting, in direct contact with employers and older workers who can help socialize youths to the workplace. Apprenticeships offer built-in opportunities for mentor relationships.

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It is technically possible for American apprenticeship to serve younger individuals; apprenticeship regulations specify a minimum age of only sixteen years. However, there are some impediments to using the apprenticeship model. For example, due to the child-labor provisions of the Fair Labor Standards Act and of insurance regulations, youths are prohibited from work in some hazardous apprenticeable job classifications in construction and other industries until they are at least 18 years old.

Another impediment is employer reluctance to take on disadvantaged youths as apprentices. Apprenticeship sponsors feel that they are making a major investment in their apprentices whom they may lose before the investment is recouped. Like other investors, apprenticeship sponsors avoid risk. One approach to resolving this problem is to make disadvantaged youth less risky investments for employers. This approach has been taken successfully through a wide variety of preapprenticeship projects and other efforts to better prepare youths for apprenticeships. These programs range from improved counselling to preapprenticeship training such as that provided in the Job Corps, various preapprenticeship programs registered by the state apprenticeship agencies in North Carolina and Florida, and to a wide range of outreach and skill development efforts to prepare youths for apprenticeship (Tolo, Glover, and Gronouski, 1980). However, the approach of expanding preapprenticeship programs to prepare youths for apprenticeship is a limited strategy due to what might be called a "funnel" problem. Few apprenticeship positions are open and competition for many of these is intense. A means of expanding the number of apprenticeships, along with getting more youths into them is needed. One approach—school to apprenticeship linkage—has demonstrated it can accomplish both.

School-to-Apprenticeship Linkage. The concept of school-to-apprenticeship linkage is simple. High-school seniors are employed on a part-time basis as registered apprentices with transition to full-time apprenticeships after graduation. As full-time apprentices, they become full-time employees and are responsible for completing their related training requirements, generally through special classes arranged through the local community college or area vocational school.

Beginning in 1977, the U.S. Department of Labor funded a series of eight pilot projects to test the feasibility of in-school apprenticeship. Projects were attempted with a variety of sponsors: local school districts, state education agencies, community colleges, and nonprofit corporations. The results of the projects were carefully evaluated (CSR, Inc., 1980a and 1980b; Williams et al., August 1981), and a manual was prepared to assist others interested in replicating the project (Martin, Williams, and Davin, October 1981).

Through June 30, 1981, the projects had developed a total of 1,464 new apprenticeship programs and indentured 3,075 apprentices. Most of the apprenticeship sponsors were small employers in manufacturing and service, and 69 percent were new to apprenticeship. Only 10 percent were union employers. Almost half of the new apprenticeships were developed in metalworking occupations, auto mechanics, or small-engine repair.

Evaluation of the projects' outcomes revealed that apprentices were more likely than their counterparts in high-school vocational education to continue in jobs for which they were trained. Student apprentices indicated high satisfaction with the experience whether or not they remained in their apprenticeship positions. Fully 95 percent expressed satisfaction with the program and 96 percent indicated they would recommend apprenticeship to a friend. Similarly, employers who hired the youths reported satisfaction with the projects. Among the employers surveyed by the evaluators, 57 percent said they were very satisfied and 34 percent were somewhat satisfied. Also, 55 percent rated student apprentices as better than other young employees, and 63 percent had already recommended the program to other employers (Williams et al., August 1981, p. 144). Perhaps the most convincing evidence that in-school apprenticeships can work is that several demonstration sites continued the program beyond the period of federal funding. In addition, versions of in-school apprenticeship programs under various funding arrangements were adopted in several other localities in Ohio, New York, Maryland, and Virginia.

In total, the Department of Labor spent $4 million on the projects over a four-year period at an average cost of $1,384 per apprentice. Much of this cost was attributable to a provision for subsidizing employers to participate in the program. The project allowed reimbursement to employers for training expenses up to one-half of the student apprentice's wages, not to exceed $2,100 per student apprentice per year. One of the project sponsors that did not offer employer subsidies, the New Jersey Department of Education, showed an average cost of $268 per apprentice. Instead, New Jersey preferred to promote the Targeted Jobs Tax Credit (TJTC) provision available for hiring cooperative education students. Despite this variation, no significant differences in training outcomes between New Jersey and the other sites were found.

The evaluators concluded that the subsidies provided to employers did not generate positive outcomes commensurate with their cost. On the whole, employers were more attracted by the program's emphasis on screening and training of entry-level workers than they were by the subsidies offered. On the basis of this conclusion, any future project should put its resources into assuring that the training is the best available rather than using scarce resources to subsidize employers.

One of the best pieces of news from the evaluation of the demonstration projects is that the cheapest means of accomplishing the project worked as well as the more expensive alternatives. Simply hiring one professional coordinator together with a part-time secretary in a school district seems to work well if they can obtain the assistance and support of school personnel and local apprenticeship field staff in recruiting students, developing apprenticeship positions, coordinating training, and arranging appropriate related classroom instruction beyond graduation.

The school-apprenticeship linkage projects proved the feasibility of in-school apprenticeships. However, while in-school apprenticeships are simple in concept, they can be difficult to implement. Success involves achieving collaboration among schools, apprenticeship registration agencies, and employers. As the demonstration projects revealed, it takes about three years to develop full-fledged working relationships. Special care must be taken to follow proper protocol in installing the program in schools. Also, the project is not appropriate for every locality. The local labor market must be able to generate a sufficient number of jobs in the skilled trades involved.

Experience to date with school-to-apprenticeship programs has revealed major points of weakness which require attention in any future efforts to implement school-to-apprenticeship linkage. For example, greater attention must be paid to assure the adequacy of related training after the students leave high school. Since most apprenticeship sponsors are small and offer only one or two apprenticeships, organizing related training in community colleges and vocational schools is often difficult in the face of minimum class size requirements. One ideal solution to this problem is to get employers to join together in associations to sponsor apprenticeships. This task could be assisted at the national level by a National Technical Resource Unit.

The National Technical Resource Unit also would assist in developing curricular design, instructional materials, and appropriate assessment instruments for competency certification. The National Technical Resource Unit would be closely tied to industry committees, and it would work closely with industry institutions as well as the Bureau of Apprenticeship and Training in the Department of Labor, state apprenticeship agencies, and the U.S. Department of Education and state education agencies. It would also assist in staff selection and staff development. The National Technical Resource Unit would build a network among staff of the various projects. Funding for added field staff of the Bureau of Apprenticeship and Training and state apprenticeship agencies should be included in the project to support servicing the projects and the new apprenticeship programs developed.

Since many of the apprenticeship sponsors recruited under school-to-apprenticeship linkage programs are new and inexperienced, considerable work is involved in establishing effective programs of related study at the high-school level and beyond. Assistance from the National Resource Unit could be of assistance in coping with this problem.

Thanks in part to the work of several individuals and organizations, interest in apprenticeship recently has increased dramatically (Hamilton, 1990; Hamilton, 1987, pp. 314-45; Jobs for the Future, Inc., 1991; Lerman and Pouncy, Fall 1990, pp. 62-77; Nothdurft, 1989; Nothdurft and Jobs for the Future, 1991). In 1991, the state of Arkansas passed legislation establishing a series of apprenticeship projects under state funding (Jobs for the Future, 1991). Several forces are driving this movement, including a new interest in German apprenticeship, the rediscovery by cognitive psychologists of the effectiveness of learning by doing, work by anthropologists in Third World countries regarding the success of training that occurs in informal apprenticeships, and reaffirmation of the apprenticeship concept by the U.S. Department of Labor's "Apprenticeship 2000" initiative during 1988-1989 (U.S. Department of Labor, 1989b). In order to distinguish the new apprenticeships from apprenticeship as traditionally practiced in the U.S., advocates have labeled their training schemes with names such as "youth apprenticeship" or "work-based learning."

Cooperative Education

Although apprenticeship is not well established in American high schools, another work-study training scheme, cooperative education, has a better foothold. About 600,000 high school students, nearly one tenth of all students who are enrolled in vocational education programs, participate in cooperative education.

The primary differences between cooperative education and apprenticeship are that cooperative education is more school based than industry based, training in cooperative education typically ends with high school, cooperative education workstations are designed to be training stations rather than permanent jobs, and cooperative education is best established in a different set of occupations than apprenticeship—primarily in retailing and clerical occupations.

Properly implemented, cooperative education has provided preparation for certain occupations, especially in certain clerical and retail fields. The key problem is that there is great variation in quality from program to program. One solution is to tie the programs to a skill certification scheme in which the skills and knowledge of the program's graduates are appropriately tested in performance, written, and oral tests appropriate to the occupation.

Partnership Academies

Restructuring existing vocational education programs in high schools is a critical component of the new system. One promising approach is the vocational academy concept. Originated in Philadelphia, the vocational academy has been replicated extensively in California. In California, the program started with two academies, one focused on computers and one on electronics in the Sequoia Union High School District in Portola Valley, to assist poor students in an otherwise affluent district. At the end of the 9th grade, students who were at risk of failure were identified and invited to join on a voluntary basis. Participants are taught in a school-within-a -school format, with a separate team of teachers. The resulting cadre of students and teachers remained together for three years. Students spent the tenth grade catching up on academics in which electronics or computers were integrated into the curriculum and field trips were conducted. In grade eleven, every student was assigned a mentor from industry who introduced the student to his or her workplace, as well as joining the student for recreational activities on at least a monthly basis. By the end of the eleventh grade, the student obtained a summer job with one of the businesses in the partnership. Usually, the student was already familiar with the workplace through the mentor. Students who stayed with the program were promised a job upon graduation from high school.

The academies have worked well because the students were well trained and well paid and also because the students "found a home" in the academies which were small in size (about 100 students at Sequoia). Partnership academies were subsequently funded in 12 school districts across California with grants of $67,500 from the state, requiring an equivalent match from industry and the district. By 1991, several additional new sites were under development in California. The new academies focused on occupational clusters in hospitality, media, health, or finance, depending on the local economy.

Variations of the academy idea also have emerged from industry sources. For example, the American Express Corporation developed and demonstrated a Finance Academy to prepare youths for careers in banking and finance in Phoenix, Arizona. The program subsequently was replicated in other cities in collaboration with other firms in the finance industry. American Express has begun an Academy in Tourism and has established a foundation to promote the academy model generally.

The partnership academy model offers several advantages over the traditional ways to organize high-school vocational education. First, clustering vocational education by industry rather than by occupation facilitates industry participation and involvement while leaving open a wide array of occupations to which students can aspire. Secondly, a partnership academy is less likely to become stigmatized than is a vocational education program organized along occupational lines. For example, an academy in the health occupations includes students who aspire to be physicians as well as students who will become nurses' aides. Thirdly, the partnership academy model offers the advantage of reaching at-risk youths earlier and more effectively than other approaches alone. Identifying students as early as the ninth grade and beginning to work with them may prevent some at-risk youths from dropping out. Using the small group school-within-a-school format to assist students to catch up provides a more personal, small-group setting for learning. All of these features make the partnership academy approach an attractive component of a school-to-work initiative.

Tech Prep Programs

Promoted by Dale Parnell and by the Center for Occupational Research and Development (CORD), the "tech prep" approach proposes alternative curricula to the "college prep" curriculum. The aim is to prepare youths for technical careers by aligning the curriculum in high school and in community college into a coherent, unduplicated set of courses (Parnell, 1985; Parnell and Hull, 1991). Such programs were formerly called the "2 + 2 programs" because they combine the last two years of high school with two years of community college. The approach requires the development of formal agreements between the secondary and postsecondary partners for integrating or articulating the high-school curricula with the postsecondary curricula. This approach can shorten the length of time required to complete a certificate or an associate degree. More often, because it offers a more efficient learning process, it can provide students with more advanced skills than the traditional approach of separately organized instruction in high school and in community college. Tech prep programs are flexible; they can include components for work-site training or work experience. They can even be combined with apprenticeships, with the students registered as apprentices.

The Carl D. Perkins Vocational and Applied Technology Education Act of 1990 authorized $125 million to be spent on planning and demonstration grants to consortia of local education agencies and postsecondary institutions for the development of tech prep programs. Such consortia are to develop a three-year plan for the development and implementation of tech-prep programs. Students successfully completing the tech prep sequence would obtain a high school diploma and a two-year associate degree or a two-year certificate.

The concept of tech prep is both logical and attractive. With federal encouragement and funding, tech prep programs should become adopted on a more widespread basis.

CONCLUSIONS

We need to build on the successful experience of the school-to-apprenticeship linkage projects and cooperative education, as well as more recent experience with the Boston Compact, the partnership academies, and tech prep programs. A primary objective is to establish a scaled-up school-to-work initiative that makes a difference for substantial numbers of youth, including minorities and youth from poor families. In short, we propose a system that encompasses a variety of training/learning options. It would begin by providing earlier and better occupational knowledge and guidance for students (and their teachers)—starting at least in middle-school years. Secondary level vocational education offerings would be restructured along the partnership academy model. High-school students would have the opportunity to participate in a compact arrangement in which employers would promise preferential access to career jobs in return for meeting achievement standards in school. Students not intending to pursue a baccalaureate degree would be offered a variety of attractive training opportunities, including youth apprenticeships, tech prep, and cooperative education assignments.

An effort is envisioned to systematically improve occupational guidance beginning as early as the 6th grade, to identify appropriate youth in ninth grade, to establish partnership academies to bring up students' basic skills and academic performance in the 9th and 10th grades, and to provide career exploration, development of preemployment skills, and mentor relationships. Beginning in eleventh grade, at least some of the academic training would be conducted in a functional context, using problems and real life situations encountered on the job. Each participating school would have a Careers Service staff member on site to help conduct the preemployment training, counseling, and matching of mentors and summer jobs.

At the end of the eleventh grade, the program would branch into a variety of flexible options, including apprenticeships, cooperative education workstations, and tech prep programs. Completing the tech prep option would require students to attend two years of community college. Likewise, completing the apprenticeships would require participation in related training beyond high school. In most cases such training would be conducted in community colleges.

These training options would be presented to students, parents, and employers as high quality opportunities that do not preclude possibilities of attending college later. They would require students to earn admission by achieving certain standards in basic skills and other competencies needed for employment. The training would be competency-based, offering a variety of instructional strategies including an individualized, self-paced mode using instructional materials in a variety of media formats (including print materials, audio-visuals, and computer-assisted instruction). Group work would also be undertaken. The curriculum would need to be substantial and challenging with a high academic content. For example, knowledge of mathematics (at least through algebra) is required for several apprenticed trades. Competency certification throughout the training and upon the completion of the training would be an integral feature.

Fearing for their own survival in a increasingly competitive world, American businesses desperately are seeking ways to improve public schools. Numerous partnerships and adopt-a-school arrangements have been initiated, and education issues are receiving greater attention from business lobbies. A key theme of political pressures from the business community is to make teachers and administrators accountable for student outcomes, but mandating that educators be "accountable" ignores the fact that learning is a joint enterprise involving both teachers and students. While good teaching can facilitate learning, it is ultimately the responsibility of the student to learn. Learning cannot occur without students taking action. One key to effective learning is motivation.

Remarkably, businesses are overlooking a major lever in their own hands for motivating students—their own hiring and promotion practices. Employers control the most important incentive for work-bound youngsters—access to jobs—yet most do not use it. In addition, industry has not articulated clearly to schools its needs in terms of learner outcomes or skills required, nor has American industry organized to develop a consensus on such standards—even for vocational education students. Within limits, many businesses have simply adjusted requirements to the level of ability of the job applicants available. Further complicating this picture is that firms do not have uniform expectations. Business is a highly heterogeneous group in terms of management practices and other important dimensions. Moreover, skill requirements change through time, and the demands of the global information economy are raising standards significantly for line workers (Commission on Skills of the American Workforce, 1990, pp. 37-42).

The issue of standards raises difficult questions. Which firms should set the standards? Ideally, should standards be set by the most progressive or leading-edge firms? If so, which firms are "leading-edge" and how is such an identification made? How often should the standards be revisited and what are the processes for doing so? These are not questions with simple answers.

Given these complexities, a good place to start is with a program such as some variation of the Boston Compact, which essentially says that if students achieve at a specified level of performance, they will be given preferential consideration for summer jobs, part-time jobs after school, and, most important, jobs at graduation. In most communities, employers will begin this process by focusing on grades and attendance, but, after accumulating experience with the first few graduating classes that meet such standards, recognition will set in that grades and attendance are not enough. Additional requirements will be required. For example, simple grade point averages do not take into account that some courses are more rigorous than others. Even more fundamental, it is not clear that grades are useful indicators of the skills employers seek. Businesses must specify what skill assessments and certifications of performance they trust. Both the standards and the measures used to assess them must be reasonable, clear, and objective.

A primary requirement for success in any school-to-work initiative is getting employers committed to the effort. Business needs to recognize that inadequacies in the preparation of American youth are not just problems for schools. The development of a quality workforce requires active participation of many outside the schools, including parents, communities, and employers. Ultimately, American employers must shoulder part of the responsibility for the formation of youth—their future workers.

Chapter 15. Effective Strategies for the Recruitment and Development of Black Faculty at Four-Year Institutions of Higher Education

by

Richard Pickering[*]

INTRODUCTION

Throughout the 1980s, there has been little change in the relatively small number of Black professors or in their respective distribution among faculty ranks. Of all racial and ethnic groups, Blacks had the smallest gain in full-time faculty positions. Between 1975 and 1985, they increased 2.7 percent in faculty positions compared to 7.3 percent for Whites, 27.9 percent for Hispanics, 48.2 percent for American Indians, and 95.7 percent for Asians (ACE, 1988a, p. 10) (see Table 14).

This chapter addresses questions concerning the underrepresentation of Black professors at traditional White four-year institutions. While the focus relates to doctoral degrees conferred to Blacks, particular attention is paid to Black males, since this group has experienced the greatest slippage in enrollment and number of degrees earned and the least progress in the number of faculty positions held (ACE, 1988a, p. 2). In the data presented, discrepancies may arise over the doctoral attainment levels of Blacks. The discrepancies are due to the "gender variable." Some of the numbers will show that Black females are progressing at a faster rate than Black males. Although this may be the case, bear in mind that the overall achievement rate for Black Ph.D.'s is still declining despite the progress of Black women (see Table 15).

Also, evidence may show White males experiencing a greater numerical drop in doctorates earned than Black males. That being the case, this study does not ignore the facts, rather its purpose is to examine the decline of doctorates earned by Blacks. Again it should be noted that over the past decade, the greatest proportional drop in Ph.D.'s occurred among Black men, who experienced a drop of 53.7 percent from a high of 684 in 1977 to a low of 317 in 1987 (Magner, 1989, p. 11) (see Table 16).

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In recent years the federal government has spearheaded initiatives that have had the effect, if not the intent, of mandating lower-quality education for minority groups. Unfortunately, there has been a decline in commitment to raising the educational attainment of Blacks. The Reagan era ushered in a period in which the federal government retreated from espousing the goals of equal opportunity (McBay, 1986, p. 1). These efforts have set the tone for the rest of the country (especially in the area of higher education) through the steady erosion of targeted educational and affirmative action programs (Wilson and Justiz, 1988, p. 10).

While the problem has generated much discussion and examination, little has been done to reverse this continuing pattern. This topic is of vital importance when one considers the demographic changes occurring within our country. According to demographer Harold Hodgkinson, "by the year 2000 America will become a nation in which one out of every three people will be a minority" (Wilson and Justiz, 1988, p. 9). This growth of minorities in the youth population will change the education system significantly, but if minority participation in the teaching force continues to decline, it will undoubtedly cause further shrinkage in minority college enrollment and graduation for these youngsters.

Although high-school graduation rates for minorities have risen over the last decade, the college entry rate has risen little, and in the case of Blacks, has actually declined. Traditional White colleges have not brought minorities onto their campuses in numbers comparable to their representation in society. Most campuses lack a critical mass of minority students and faculty who can serve as role models and make new students feel at home (Johnson, 1988, p. 8).

This lack of support from schools increases an already heavy burden that leads to many minorities dropping out of college. Thus, attrition becomes more significant when one considers that fewer minorities are pursuing graduate and doctoral degrees. The insufficient pool of doctorates combined with a lack of commitment to affirmative action has produced the most minimal representation of minorities in the faculties and the administrations of predominantly White institutions (Wilson and Justiz, 1988, p. 9).

In recent years, many studies have concluded that the number of Black faculty members should be increased significantly. Studies by the Carnegie Forum on Education and the Economy (*A Nation Prepared)* and the Holmes Group (*Tomorrow's Teachers)* both concluded that Black faculty members play an essential part in Blacks graduating from predominantly White colleges.

Black professors are important in retaining minority students because they serve as mentors and role models and help the students cope and integrate into the college community. For these reasons, it is critical to expand the pool of Black faculty at traditional White four-year schools, since most Blacks enroll at these institutions.

However, all of these studies agree that fewer Blacks are enrolling and graduating from college. Perhaps then, a lesson can be learned if we examine the faculty commitment at historically Black colleges and universities (HBCUs). Faculty at these schools tend to devote considerable time to classroom instruction and the educational development of students as opposed to research and activities external to the university.

In comparison with most traditional White four-year schools, Black colleges tend to place greater emphasis on student and faculty participation in a wide range of campus activities. Thus, students are provided with a commitment to academic excellence as they have role models who can influence their dreams (Payne, 1988, p. 104).

INTERVENTIONS

Recent recruiting intervention programs have achieved moderate success in attracting Black professors to particular schools. For example, the Miami University of Ohio raised the number of Black professors from 7 to 29 between 1980-81 and 1988-89. During the 1987-88 academic year, Miami hired 15 new Black faculty members, of whom 10 were on tenure track (Heller, 1988a, p. 15).

One reason for this success has been that the administration has used both incentives and threats to encourage academic departments to make a serious commitment to affirmative action. Miami's voluntary affirmative action plan goes beyond the typical affirmative action measures because it allows for minority preference hiring.

School officials cite a legal precedent for this under the U.S. Supreme Court's decision in *United Steelworkers v. Weber*. The court ruled that employers may adopt an affirmative action program that grants Black workers preference as long as the program is temporary and addresses "conspicuous racial imbalances" due to discrimination or historical exclusion (Heller, 1988a, p. 16).

Under the Miami plan, a department with a historical underrepresentation of minority faculty may fill a vacant position without a full search by identifying a qualified Black or other minority candidate, as long as the candidate is accepted by a majority vote of the department. To boost enthusiasm, President Paul G. Pearson opened up six new tenure track lines to departments that showed initiative in identifying Black candidates. Thus, the Miami plan offers potential candidates real job opportunities for tenured positions, as opposed to the promise of a place in the recruiting pool (Heller, 1988a, p. 16).

While some may claim reverse discrimination (against those departments that do not participate and receive funding cuts), the program has worked because it has the full backing of the president. He also established a $25,000 fund to help bring minority candidates to campus, and, with open slots reserved for Blacks, the response has been good. Overall, he felt that this particular type of hiring has not lowered the academic standards of the school (Heller, 1988a, p. 17).

The University of Texas at Austin has been another school that has had "modest results" in diversifying its faculty. In the fall of 1988, The University of Texas at Austin hired 18 minority professors, of whom 8 were Black and 10 were Hispanic. Thus the school increased the number of minority faculty who hold tenured or tenure-track positions by 32 percent ("Gains Made in Black, Hispanic Enrollment . . ." 1988, p. 6).

Lewis Wright, assistant vice president for administration at The University of Texas at Austin, explained that "in an effort to intensify our minority recruitment, 10 of these positions were funded from a new program called the Dedicated New Minority Faculty Positions Program." Initiated by President William Cunningham, the program was funded with $400,000 for the 1988-89 school year to secure positions specifically reserved for minority visiting or regular faculty appointments (Wright, Telephone interview, October 17, 1988).

Other examples of recruiting techniques used by administrators include the use of departmental rewards. Recently, both Purdue University and the University of Wisconsin, initiated incentive plans aimed at increasing the proportion of minority faculty on their campuses. Those departments that identify and hire minority professors will receive extra funds for an additional faculty position within the department ("Minority Faculty Recruitment: No More Lip Service," 1988, p. 1).

At Purdue, the first five departments to select a minority professor will receive funds for an additional faculty member the following year. The five minority faculty members will receive entry-level positions as assistant professors with a starting salary between $30,000 to $40,000. Whereas this "modest initiative" calls for a small increase in faculty diversity, it is hoped that the selecting departments will use the extra positions to hire other minority professors, although this is not mandatory ("Minority Faculty Recruitment: No More Lip Service,"1988, p. 1).

Currently, no data are available on the results of the first year of the Purdue program. For this program to be successful, the additional faculty position should be reserved for a minority in order to create a multiplier effect throughout each of the selecting departments. Until this requirement is satisfied, the percentage of minority professors at Purdue will increase very little. If the goal is to significantly increase the number and percentage of minority professors, then it seems contradictory to fund a department to hire a nonminority for the extra slot, which will at least partly offset the impact of hiring a Black.

In January 1988, Chancellor Donna Shalala of the University of Wisconsin—Madison launched a three-year plan to add 70 minority professors to that institution. In order to attract more minority graduate students and visiting faculty, the University of Wisconsin—Madison has established ties with those universities that have substantial minority enrollment. Some of these schools include such HBCUs as Florida A&M , Hampton Institute, and Spelman College. As an incentive to locate and hire minority faculty, the University of Wisconsin—Madison departments can receive up to $10,000 in extra funding to aid the search. The school also set aside funds for 25 senior-level faculty positions in any department, as long as they are filled by minority professors ("Minority Faculty Recruitment: No More Lip Service," 1988, p. 3).

Similar to the Miami plan, the Madison plan has had some success; the university hired 18 minority professors for senior or tenure-track faculty positions after the first year of implementation. Twelve of the slots went to Hispanics, while three each went to Blacks and American Indians (Certain, Telephone interview, April 20, 1989).

All of these cases illustrate an intense commitment on the part of some traditional White universities to increasing the number of minority faculty within their ranks. Still, there are other examples of how some universities respond to enlarging their pool of minority candidates. Increasingly, cooperative partnerships or consortia have been established between state governments, institutions of higher learning, private businesses, and nonprofit foundations.

One such partnership is the Florida Endowment Fund. Through this unique collaboration created in 1983 by the McKnight Foundation, the Florida state legislature, and various presidents from state colleges and universities have combined its resources to address educational problems which affect minorities in the state.

Florida's rapid growth, coupled with its demographics and the fact that it was one of the key states identified in the 1970 *Adams* desegregation case, made it a prime area for such an effort (Brazziel, 1988, p. 114). A three-tiered plan was presented by the McKnight Foundation to create a perpetual fund to support Black students pursuing doctorate degrees. The plan includes two minority fellowship programs funded by a $10 million foundation grant matched by $5 million from the state (Harrington, Telephone interview, April 20, 1989).

One of these programs, the McKnight Black Doctoral Program, was created to increase the number of Black faculty in Florida. The fund awards 25 fellowships annually to students who receive $5,000 for tuition and a $11,000 stipend for three years of doctoral studies at one of 11 participating public or private Florida institutions. Fifty two percent of the awards have been in disciplines in which Blacks have been traditionally underrepresented, such as engineering, computer sciences, and the physical sciences (Harrington, Telephone interview, April 20, 1989). By 1988, the five-year-old program had achieved a retention rate of 85 percent and had produced

92 fellows. While the graduates are not required to stay in Florida, it is hoped that these fellows will remain in state in order to be role models for other aspiring minority youths (Brazziel, 1988, p. 114).

The Florida Endowment Fund also sponsors a Minority Junior Faculty Development Fellowship Program. Created in 1984, the program encourages excellence in teaching and research for nontenured assistant professors and places an emphasis on those minorities who are either Black or [White] female. Twenty $15,000 fellowships are awarded annually to junior faculty who have at least two years of service at institutions of higher education in the state. The program provides recipients a full year to pursue special academic interests and/or research projects that will enhance their teaching and tenure/promotion status at their home institutions. Between 1983 and 1988, 72 fellowships were awarded to faculty at 21 institutions statewide. Over 70 percent of the recipients were Black; 27 awards went to Black women and 24 to Black men (Collison, 1988, p. 28).

PROBLEMS

The world of graduate study is not accessible to most minority students. Black doctoral recipients are disproportionately concentrated in a very small number of institutions. The most recent data show that in 1980-81, 60 percent of the doctoral degrees conferred to Blacks were awarded by 10 percent of the doctorate granting institutions. Many of these institutions were historically Black colleges and universities, which means that the majority of predominantly White doctorate-granting institutions awarded no degrees at all to Blacks (Wilson and Justiz, 1988, p. 12).

Research provides overwhelming evidence that Blacks are underrepresented among doctoral holders in the life sciences, physical sciences, and engineering. Meanwhile, Blacks are overrepresented among Ph.D. holders in education and social sciences, especially sociology. In 1985, Blacks earned a total of 633 doctorates for the latter two fields, compared to only 128 degrees combined in engineering and the life and physical sciences (see Table 17).

Factors contributing to the overall shrinkage in the number of Black professors in higher education include the high attrition rate among Black students at lower ends of the pipeline. A second factor is that given the rising costs of obtaining a doctorate, potential Black doctoral candidates are forced to pursue other options, such as the military. A third factor is the persistent myth that the pool of minority applicants cannot be enlarged.

The poor quality of education that Black youngsters receive at early stages of schooling may be the biggest factor contributing to the shortage of minority professors in higher education.

As the Carnegie Forum on Education and the Economy pointed out in *A Nation Prepared*:

> . . . because teaching will need a very high proportion of college graduates in the years ahead, the problem of minority teachers cannot possibly be solved without addressing the fundamental problems of minority preparation throughout the pipeline . . . (1986, p. 83)

The foundation for potential minority faculty begins with children at the lower ends of the scale. Unless something is done first to ensure their progression through the education pipeline, the supply of minority professors in higher education will continue to decline.

Unfortunately, many Black youngsters, especially males, are born into a life of poverty with no positive role models to guide them. Also, they usually attend schools in poor districts where less money is spent for students, where teachers are the least experienced and sometimes the least prepared, where individual attention is impossible due to overcrowding, and where guidance counselors are in scarce supply. Thus, it is easy to see why their desire and ability to achieve academic excellence is inhibited (Citizens Commission on Civil Rights, 1988, p. 1).

Consequently, these kids either drop out of the educational pipeline faster than other children, or they hang on until high school, by which time they lack the skills to prepare for college aptitude tests. The cause of this is that Black and other minority youths are not directed into college-preparatory programs. They take fewer years of science and mathematics and are less likely to take standardized exams for college entrance. Even for Black students who do get into four year schools, most are unprepared for the minimal number of minority faculty in these predominantly White institutions. Thus they "too" eventually drop out (Brooks, 1987, p. 240).

A second problem that adversely affects the size of the minority teacher pool is the "rising cost" of receiving a Ph.D. Shirley Vining Brown has noted a direct correlation between the decline of Black doctorates and federal cutbacks in financial assistance available to them. From 1970-1986, federal support in the form of grants for Black doctoral candidates was reduced by $300 million (Brown, 1988, p. 25).

With less aid available in recent years, fewer Blacks are enrolling in graduate schools. As Table 18 indicates, from 1976 to 1984 Black graduate enrollment declined more than 20 percent, while Hispanic enrollment rose by 20 percent. The trend toward greater reliance on loans and reduction in the availability of grants and fellowships has contributed to the growing concern over "student indebtedness," as it affects the prospects of Black students continuing on through the pipeline (Nettles, 1987, p. 1).

Recently, the National Endowment for the Humanities released a study that showed that obtaining a Ph.D. in this area was much more expensive for Blacks than it was for Whites. A major reason for this was the fact that Whites could get more research grants and teaching assistantships, while Black candidates had to rely more on their personal earnings as a source of tuition (Brazziel, 1988, p. 109) (see Table 19).

A 1988 report by the National Science Foundation revealed that of 1,986 science and engineering Ph.D. graduates, Blacks received a smaller share of financial aid support from their respective universities compared to foreign students and Whites (both of whom received the most aid). Even Hispanics did better in receiving support than Blacks. They received a total of 41 percent of financial aid, with 21 percent of that support coming from research assistantships, 16 percent from teaching assistantships, and 4 percent from institutional fellowships. Granted that these numbers are small for Hispanics, the percentages for Blacks are even more dismal, as they received only 29 percent of financial aid with 12 percent from research assistantships, 11 percent from teaching assistantships, and 6 percent from institutional fellowships (Adams, 1989, p. 25).

It has long been recognized that the most favorable forms of graduate financial aid for Ph.D. students are university-awarded assistantships. This type of aid tends to place the recipient in an apprentice association with a faculty mentor. The apprenticeship training engages the student more fully in departmental activities such as seminars, group projects and coauthorship of papers—all of which encourage scholarly output and completion of the degree (Adams, 1989, p. 26).

If minority students must rely almost exclusively on financial support from sources external to the university, they are on the periphery of departmental activities, which adds to the burden of finding an advisor, research topic, supportive colleagues, and faculty members to guide the Ph.D. dissertation. Without the firsthand knowledge and support one gains through departmental associations, many minority students interrupt their graduate studies permanently as "ABDs" (all but dissertation completed) (Adams, 1989, p. 26; and Brazziel, 1988, p. 109).

Add the prospect of paying off large debts for both undergraduate and graduate schools, and one begins to see why limited financial support deters minorities from pursuing a career in academia. In view of this fact, merely increasing the number of Black students receiving bachelor's degrees will not necessarily produce a corresponding increase in the number who enter and succeed in graduate school. However, this is not to say that increasing the number of Black baccalaureates will not help the situation, as it still provides a potential graduate pool from which to draw (Nettles, 1987, p. 1).

Consequently, potential minority scholars are forced to seek other career opportunities. Significantly, the decline in Black enrollment has coincided with a modest rise in the number of Black military personnel, who now make up 20 percent of the armed forces. Black participation in the armed services increased 5.5 percent from 390,370 in 1980 to 412,011 in 1986. Over the same period, Black enrollment at four-year institutions dropped 3 percent from 634,000 to 615,000 (Cox and Jobe, 1988, p. 65).

If the goal of the higher education community is to increase the number of Blacks, their education levels, and their academic accomplishments to an equitable degree, it must follow the military's example and consistently make opportunities available and demonstrate its commitment to that goal (Cox and Jobe, 1988, p. 68). While the military's commitment may not be entirely due to unselfish reasons, clearly equal opportunity and affirmative action have played a large part in successfully recruiting Blacks and other minorities into the service. Affirmative action in the military has been demonstrated by the military's recruitment success through the promotion of its personnel programs, which emphasize an understanding of human relations and human rights and have created a more hospitable environment for Blacks than society at large. This factor, combined with the resurgence of racism on predominantly White college campuses, may induce Blacks to believe that they are less likely to compete equally in academia.

Professor William Brazziel of the University of Connecticut has noted:

> many capable Black youngsters are trading the "high costs of higher education and the uncertainties of post-college employment" for the *high-tech training* and careers in the military. Many of these young people could have been master's and doctoral candidates, as this appears to be the case with the growing Black officer corps (Brazziel , 1988, p. 111).

A fourth factor contributing to the missing minority faculty is the view of many higher-education officials that the pool of minority scholars cannot be enlarged. However, this perception is not entirely true, for in fact more minority candidates are available than are finding appointments. Blacks have earned 4 percent of the Ph.D. degrees awarded from 1972 through 1987. While most of the degrees were in education, Blacks also earned a combined 3.5 percent of the degrees in liberal arts, engineering, and business (Brazziel, 1988, p. 110).

A related problem often mentioned in the struggle to increase the number of minority faculty in four-year institutions is the notion is that most Black and other minority students earn their degrees in education and are not interested in other fields. In reality, about 60 percent of minority students receive doctorates in fields other than education (Brazziel, 1988, p. 110). Despite this applicant pool from which to draw, Blacks in 1988 composed only 2.3 percent of the teachers at predominantly White four-year institutions. Incredibly enough, this situation has occurred while 70 percent of White doctorate recipients found employment in educational institutions over this 15-year span. Far fewer Black doctorates were as fortunate (Wilson and Justiz, 1988, p. 12).

One reason for this discrepancy may be found in the composition of the search committees at predominantly White colleges and universities. The faculty members who create and compose these committees have long practiced favoritism in hiring to discourage Blacks, while rationalizing that the pool of minority candidates is not as qualified as Whites (Olivas, 1988, p. 7). Minority access to academia is further exacerbated by the repetition of discouraging and inaccurate rhetoric by university and college officials about the unavailability of minority talent. Use of such rhetoric creates a self-fulfilling prophecy, as it turns the best minority students away from pursuing advanced degrees in higher education, especially when they see hostile attitudes toward those few minorities who do aspire to the profession (Moore, 1988, p. 118).

Thus, when many White administrators say that "they are looking for Blacks, but cannot find them," they may in fact be saying that they are looking for superstar scholars, who are in short supply regardless of race or color. Such practices allow for the maintenance of the status quo in higher education (Farrell, 1988, p. 84).

The easiest way to alleviate this problem and thereby perhaps eliminate it is for college and university officials to intensify their efforts to expand the pool of eligible minority scholars. Presidents and administrators can begin by taking steps to rectify the indiscretions in search procedures by frankly admitting that search committees sometimes fail to tap into the existing pool of qualified minority candidates.

In conjunction with this goal, affirmative action programs such as the ones used by Miami University of Ohio and the University of Wisconsin—Madison must be instituted and enforced cooperatively by public universities and the respective state governments that fund these four-year institutions.

CONCLUSIONS AND RECOMMENDATIONS

In order to remedy the decline in the number of minority professors in higher education, many reforms are needed throughout all sectors of society. Some suggestions include: (1) predominantly White universities cultivating their own pool of minority faculty applicants, (2) increasing affirmative action programs that use *departmental incentive rewards* and impose stiff penalties for noncompliance, (3) expanding consortia between public and private institutions such as government, colleges and universities, the private sector, and nonprofit organizations, and (4) strengthening those Black colleges that have doctorate programs.

The first method suggests that predominantly White institutions should "grow their own pool" of minority doctoral candidates. This solution would involve a significant investment of time and finances, as well as a total commitment from the school's governing board, president, and faculty (Herring, 1988, p. 8). This strategy has two components. First, participating institutions would set up Ph.D. programs within their own schools to train minority undergraduates who would become "heirs apparent" to faculty positions. Second, they would establish a network to identify and hire prospective minority scholars.

Some traditional White schools, such as Duke University, are adopting these principles. In the spring of 1988, the Duke administrators realized that its minority pool of applicants was too small and implemented a plan to establish Ph.D. programs in a number of disciplines. Schools such as the arts and sciences and engineering will contain these programs in an effort to double the number of minority doctoral candidates by 1993 (Heller, 1988b, p. 17). The plan requires each department to demonstrate aggressive recruiting efforts to hire at least one Black faculty member in the next four years. Recruiting will be conducted in conjunction with the "tapping" of new contacts in order to build a viable networking system. The school will invite minority scholars to the campus as either guest lecturers or visiting faculty. Such visits would allow them time to learn the practices of the university, while also building important contacts inside the system (Heller, 1988b, p. 17).

The University of Wisconsin, likewise, is trying to develop its own pool of minority doctorates under the previously mentioned Madison plan. Wisconsin has established ties with universities which have substantial minority enrollment in order to attract more minority graduate students and visiting faculty to the campus ("Minority Faculty Recruitment: No More Lip Service," 1988, p. 1).

This plan recently was extended to the entire University of Wisconsin System, which adopted a loan-forgiveness program for minority doctoral students who graduate and take teaching positions in the University of Wisconsin System. Under the program, annual loan totals up to $10,000 can be forgiven at a rate of 20 percent per year. Wisconsin's commitment to developing programs to increase the supply of minority professors is a bold model that should be replicated at various institutions of higher learning.

A second recommendation for remedying the declining ranks of minority professors is to expand affirmative action through the use of departmental rewards. Although college and university presidents verbalize affirmative action recruitment and equal opportunity employment, they leave recruitment and hiring to the institutions' various departments (Herring, 1988, p. 8). Individual departments may not be committed unless they are encouraged to seek out and hire qualified minority faculty members. As noted earlier, Purdue University provides the first five departments that hire minority professors with money for an additional faculty position within the department. It is hoped that the new professor will be a minority, although this is not a requirement. Preferably, the extra slot should be reserved for a Black or other minority in order to create a multiplier effect within the selecting departments.

Although this incentive program calls for hiring only five minority professors, it is intended to demonstrate to departments at Purdue how to recruit members of minority groups so that more will be hired in the future. This point is of significance, since some university departments may still use the best qualified criteria (as opposed to qualified) as a "copout" to avoid the affirmative action mandate (Heller, 1988a, p. 18).

A third recommendation for increasing the number of minority professors is to strengthen and expand existing consortia between government, academia, the private sector, and foundation groups. These partnerships have funded many programs that have encouraged minority students to excel through the education pipeline and avoid dropping out of the system.

An exemplary consortium aimed at increasing the number of minority faculty members is the previously mentioned Florida Endowment Fund. This consortium has targeted its resources to attack the underrepresentation of minorities in certain disciplines with great success. In fall 1988, the McKnight Black Doctoral Program had 14 Black students matriculated in engineering, which equaled the total number of Ph.D.'s awarded to Blacks nationwide in 1986. Also, in the field of computer science which produced only one Black Ph.D. in 1986, the program had 11 students matriculating (Collison, 1988, p. 28) (see Table 20). If the present course continues, the McKnight Program will be the nation's top production source for Black Ph.D.'s in several critical disciplines. Subsequently, education officials in such states as Maryland, Massachusetts, Pennsylvania, and Tennessee, are now considering copying the Florida program.

Another consortium project that strives to increase the supply of future minority professors is the Black Scholars Program, funded by the Woodrow Wilson National Fellowship Foundation at 15 historically Black colleges and universities (HBCUs). Created in 1986, this program allows noted Black academics to spend a week on the campuses of HBCUs to encourage outstanding students to consider graduate study as preparation for careers as teachers and scholars. The Black Scholars Program concentrates on attracting students to the humanities and the natural sciences, areas with the greatest shortages of Black faculty ("Hewlett Foundation Extends Black Scholars Program," 1988, p. 18).

Black academics participating in the Black Scholars Program serve as important role models for the academic profession and help to recruit their future colleagues from today's students. As Professor Walter E. Massey of the University of Chicago pointed out:

> . . . the fewer minority role models and mentors there are, the fewer there will be to attract the next generation of Blacks to colleges and graduate schools, with consequences for all professions and the entire country. The projected need for college teachers in the mid-1990s means an opportunity

> to increase the number of Black faculty members by enlarging the pool from which they are drawn . . . [Thus] if colleges are ever to increase their enrollment of minority students to say nothing of attracting some of them to careers in higher education—they will have to increase the number of minority faculty members ("Hewlett Foundation Extends Black Scholars Program," 1988, p. 18).

In an effort to reach this goal, the Wilson Foundation in 1988 selected an additional nine colleges to participate in the program over the following two academic years. This expansion was accompanied by increased funding to allow students to visit noted Black scholars at their own institutions and to purchase library books in the scholars' particular fields.

A final suggestion for increasing the number of Black faculty members is to strengthen Black colleges with doctorate programs. Strengthening such programs is pivotal because, although the majority of Black and minority undergraduates are enrolled at predominantly White schools, a significant share of the degrees earned by Blacks is still awarded by historically Black institutions (Hatton, January 1988, p. 67). According to the American Council on Education, in 1984-85, "HBCUs accounted for 34 percent of the bachelor degrees earned by Blacks at four-year institutions, while enrolling 'only 18 percent' of Black students" (ACE, 1987, p. 8). This figure is important with respect to those Black undergraduates who pursue advanced degrees.

The reason for the success of HBCUs in producing future Black doctorates is due to the fact that many of these schools place this goal at the center of their missions and are seeking the best students in the nation on the basis of their record of producing graduates who become doctors, doctorates, MBAs, and the like. Also, more than two-thirds of the professors and administrators at these campuses are Black, which provides visible encouragement for those students seeking careers in academia.

On average, only about 3 percent of the baccalaureates in America go on for doctorates, but HBCUs send 9 to 12 percent of their graduates to doctoral programs. This record of achievement supports the argument that HBCUs are still the most sophisticated and productive in providing preparation for graduate study to Blacks, as well as graduating the highest number of Black master's and doctorate recipients (Brazziel, 1988, p. 111) (see Table 21).

Such information does not imply that all Black undergraduates must attend HBCUs in order to pursue advanced degrees. On the contrary, the evidence is intended to encourage White four-year colleges to recognize that it is indeed possible to produce qualified Black doctorates and that they too can produce these results given the right set of conditions on their campuses.

Traditional White schools can learn from HBCUs what strategies are necessary in providing Blacks with an environment in which they can excel. Perhaps many White four-year institutions can recreate those conditions most favorable to the recruitment, retention, graduation, and advancement of Blacks toward doctoral degrees.

In order to increase the number of Black professors, additional financial support must be provided to the HBCUs from traditional White institutions. The success of increasing Black teachers in higher education depends upon White schools working together with these colleges to research these problems and find solutions. The limited number of Black professors is not a Black problem, only of concern to Blacks and HBCUs; it is a concern to the professions and to the nation (Hatton, January 1988, p. 67).

The Florida Endowment Fund with its two McKnight Fellowship Programs offers the best example of predominantly White institutions working to aid HBCUs. Although the fund covers tuition and fees for minority participants, a traditional White institution such as the University of Florida can still provide financial support to a historically Black college such as Florida A&M. This collaboration involves the donation of research funds from the larger White university to allow Black Ph.D.'s at the smaller school an opportunity to work on projects relating to issues that are vital to the interests of both institutions.

Increasing the number of Black faculty at our nation's colleges and universities is not going to be achieved in the short run. There are still too few Black graduate students in the pipeline to expect any substantial increase in the number of faculty. However in the long run, Black faculty numbers can increase substantially, but only if there is a strong collective effort by colleges and universities, government, foundations, and the corporate sector to enhance the possibilities for Blacks and other minorities to pursue careers in college teaching. These public/private partnerships are vital in providing resources such as financial assistance, equal opportunity, and social commitment, which are the necessary incentives for Blacks to achieve academic excellence.

Table 14. Full-Time Faculty in Higher Education by Race/Ethnicity and Sex: 1975, 1983, and 1985

	1975		1983		1985		% Change
	Total	%	Total	%	Total	%	1975-1985
All	446,830	100.0	485,739	100.0	488,799	100.0	9.4
Men	336,362	75.3	356,579	73.4	354,213	72.5	5.3
Women	110,468	24.7	129,160	26.6	134,586	27.5	21.8
White	409,947	91.7	440,505	90.7	439,767	90.0	7.3
Men	312,293	69.9	326,171	67.1	320,969	65.7	2.8
Women	97,654	21.9	114,334	23.5	118,798	24.3	21.7
Black	19,746	4.4	19,571	4.0	20,283	4.1	2.7
Men	10,894	2.4	10,541	2.2	11,053	2.3	1.5
Women	8,852	2.0	9,030	1.9	9,230	1.9	4.3
Hispanic	6,323	1.4	7,456	1.5	8,087	1.7	27.9
Men	4,573	1.0	5,240	1.1	5,683	1.2	24.3
Women	1,750	0.4	2,216	0.5	2,404	0.5	37.4
Asian	9,763	2.2	16,889	3.5	19,104	3.9	95.7
Men	7,830	1.8	13,677	2.8	15,323	3.1	95.7
Women	1,933	0.4	3,222	0.7	3,781	0.8	95.6
American Indian	1,051	0.2	1,308	0.3	1,558	0.3	48.2
Men	772	0.2	950	0.2	1,185	0.2	53.5
Women	279	0.1	358	0.1	373	0.1	33.7

Source: American Council on Education. 1988. *1988 Status Report on Minorities in Higher Education*, p. 32.

Table 15. Race/Ethnic Status of Ph.D.'s—U.S. Citizens, 1975-1987

Total Numbers of Ph.D.'s

Year of Doctorate	Black	Hispanic	White	Asian American
1975	999	303	24,352	286
1976	1,095	340	24,373	344
1977	1,116	423	23,065	339
1978	1,033	473	21,811	390
1979	1,056	462	21,920	428
1980	1,032	412	21,993	458
1981	1,013	464	21,979	465
1982	1,047	535	21,674	452
1983	921	538	21,673	492
1984	953	535	21,321	512
1985	909	559	20,641	515
1986	820	567	20,358	527
1987	765	618	20,361	540

Percent of Ph.D.'s

1975	3.8	1.2	93.7	1.1
1976	4.2	1.3	93.1	1.3
1977	4.5	1.7	92.2	1.4
1978	4.3	2.0	91.8	.6
1979	4.4	1.9	91.5	1.8
1980	4.3	1.7	91.8	1.9
1981	4.2	1.9	91.6	1.9
1982	4.4	2.2	91.1	1.9
1983	3.9	2.3	91.4	2.1
1984	4.1	2.3	91.1	2.2
1985	4.0	2.5	90.9	2.3
1986	3.6	2.5	89.4	2.3
1987	3.4	2.8	90.9	2.4

Sources: Shirley Brown. 1988. *Increasing Minority Faculty: An Elusive Goal.* Princeton, N.J.: Educational Testing Service, p. 5, and *Chronicle of Higher Education,* vol. 35 (March 1, 1989), p. 11.

Note: Percentages do not add to 100 since American Indians are not included.

Table 16. Race/Gender Status of Ph.D.'s—U.S. Citizens, 1977-1987

	Asian		Black		Hispanic		White	
	Men	**Women**	**Men**	**Women**	**Men**	**Women**	**Men**	**Women**
1977	251	88	684	432	310	113	17,011	6,054
1978	287	103	584	449	317	156	15,573	6,238
1979	311	117	551	505	308	154	15,261	6,659
1980	313	145	499	533	256	56	14,848	7,145
1981	315	50	499	514	275	189	14,458	7,521
1982	281	171	483	564	344	191	13,984	7,689
1983	312	180	412	509	288	250	13,599	8,074
1984	338	74	427	526	313	222	13,155	8,168
1985	329	187	379	533	300	261	12,778	7,926
1986	347	180	321	499	299	268	12,257	8,281
1987	367	173	317	448	332	286	12,116	8,245

Source: *Chronicle of Higher Education*, vol. 35 (March 1, 1989), p. 11.

Table 17. Doctorates Conferred in Selected Fields by Race/Ethnicity, 1984-85

	Total	Total Minority		Hispanic		Black		White	
Field	**No.**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
Education	7,032	819	11.6	163	2.3	521	7.4	5,615	79.8
Social Sciences	2,828	260	9.2	73	2.6	112	4.0	1,969	69.6
Physical Sciences	3,369	268	8.0	43	1.3	35	1.1	2,420	71.8
Biology/ Life Sciences	3,165	253	7.5	67	2.0	53	1.6	2,275	81.2
Engineering	3,165	397	12.5	88	2.8	40	1.3	1,370	43.3

Source: American Council on Education. 1987. *1987 Status Report on Minorities in Higher Education*, p. 25.

Table 18. Graduate Enrollments for Blacks and Hispanics

Year	Blacks	Hispanics	All
1976	65,350	20,274	1,081,858
1980	59,993	24,263	1,096,455
1984	52,834	24,402	1,100,353

Source: "The Missing Minority Faculty." 1988. *Columbia University Newsletter*, p. 3.

Table 19. Sources of Graduate School Support for Black Doctorates
U.S. Citizens, 1976-1986
(percent)

Source of Support	**1976**	**1978**	**1980**	**1982**	**1984**	**1986**
Federal Fellowship/Traineeship	30.2	19.3	19.1	17.9	17.7	20.5
G.I. Bill	15.9	11.7	6.5	5.8	5.2	3.3
National Fellowship	25.3	24.6	26.6	23.7	10.4	7.6
Self/Family	77.5	73.9	85.2	81.3	81.0	86.0
Government Student Loans (GSL)	16.9	12.9	18.8	16.2	25.0	35.5
Other loan	14.1	12.8	6.0	18.2	20.3	15.6

Source: Shirley V. Brown. 1988. *Increasing Minority Faculty: An Elusive Goal*. Princeton, N.J.: Educational Testing Service, p. 25.

Table 20. Doctorates Earned by U.S. Citizens in 1986

	Black	Hispanic	All
Engineering	14	25	1,379
Physical Sciences	25	53	3,003
Professional	63	23	1,389
Life Sciences	64	72	4,342
Humanities	70	76	2,728
Social Sciences	163	130	4,548
Education	421	188	5,595
Totals	820	567	22,984

Source: "The Missing Minority Faculty." 1988. *Columbia University Newsletter*, p. 2.

Table 21. Degrees Conferred by Historically Black Colleges and Universities for 1981-82 and 1984-85

Year	Bachelor's	Master's	Doctorate	Total
1981-82	22,047	4,447	87	26,581
1984-85	21,467	4,213	174	25,854
% Change 1981-82 to 1984-85	-2.6	-5.3	100	-2.3

Source: American Council on Education. 1987. *1987 Status Report on Minorities in Higher Education*, p. 26.

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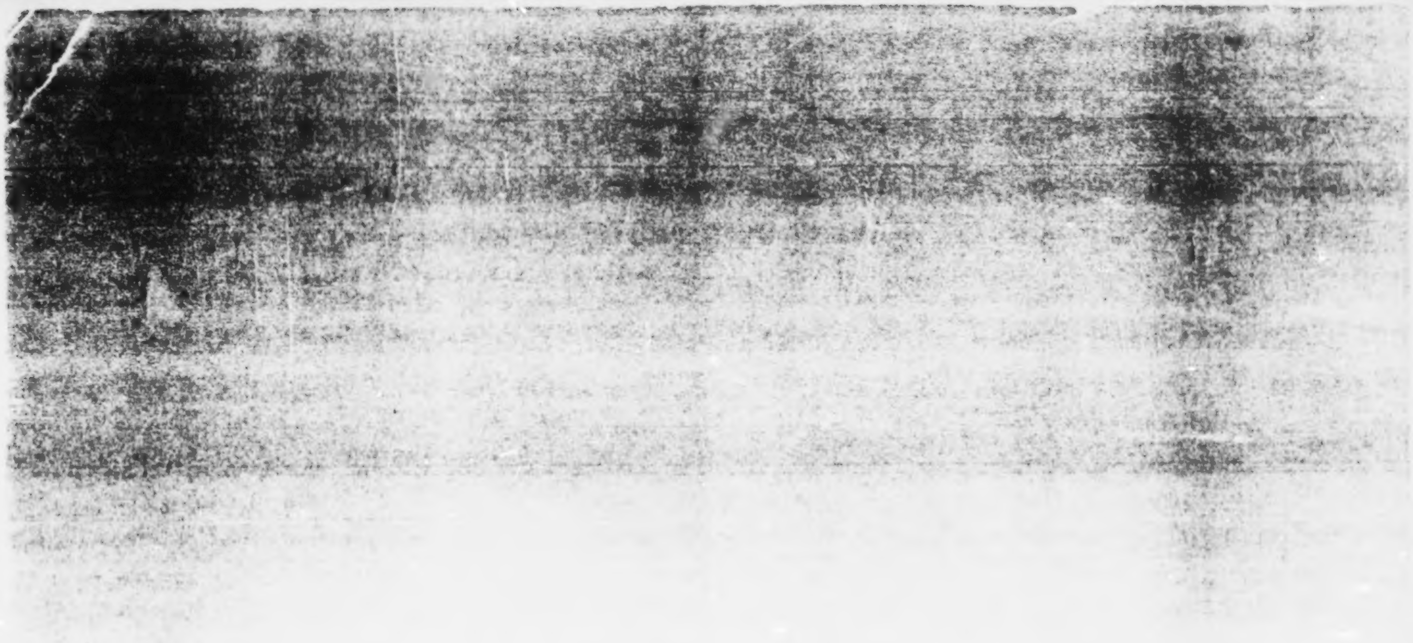

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